A Guide to Purchasing Copiers

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The Department of General Services, Procurement and Logistics, State Printing & Duplicating conducted a Office Imaging Documents Solutions solicitation (001IT816335) for copiers (multifunctional devices), printers, fax machines, scanners, high volume digital production equipment, document management services, litigation reprographic support services and other imaging solutions in 2006. This solicitation resulted in the selection of Kyocera-Mita America, GTSI Corporation, Action Business Systems, Oce North America, Oce-Imagistics (formerly Imagistics), Rudolph Information Systems & Equipment, Ricoh Corporation (includes Lanier product line), Sharp Electronic Corporation, Toshiba, Konica-Minolta, Panasonic, and Xerox as approved providers. Contracts are in effect for the period covering October 12, 2006 through October 11, 2011.

The awarding of contracts to multiple vendors opens the document print market to multiple equipment providers and provides end-users with a variety of options, configurations and services.

List of approved providers, contract numbers and contact information

Statewide Contract Number	Vendor Name	Contact Name	Telephone Number
001B7900171	Document Business Solutions	Matt Einstein	(410) 337-3700
001B7900150	GTSI	Steven Somers	(410) 409-3762
001B7900316	Konica-Minolta Business Solutions	Kristen McKenna	(703) 842-3264
001B7900089	Kyocera-Mita America	Carol Moran	(301) 268-0700
001B7900141	Maryland Office Systems, Inc.	Craig Jenkins	(410) 661-0830
001B7900139	Oce-Imagistics	Christopher Burke	(443) 648-4861 x2940
001B7900173	Oce North America, Inc	Todd Curran	800-788-5916 x335
001B7900175	Panasonic Digital Document Company	Michael Hurley	(201) 392-4194
001B7900144	Ricoh Corporation	Beverly Novotny	(410) 336-6147
001B7900149	Rudolph Information Systems & Equipment	Vincent Orlandi	(410) 242-2100
001B7900140	Sharp Electronics Corporation	Pam McDonald	(703) 338-6810
001B7900145	Toshiba America Business Solutions, Inc	Kathryn Alexander	(949) 462-6000
001B7900157	Xerox Corporation	Herbert Jenkins	(410) 461-1227

If you are considering rental, lease or purchase of a copier / MFD device you can contact DGS, Procurement & Logistics on 410-767-4425 for advice. Before pursuing quotations you are also advised to view the **Guide to Purchasing Copiers** to gain background insight into the acquisition of copiers.

About this guide

Acquiring a copier is something that is usually done only every four or five years. Over that time, technology advances means that the range of machines you are familiar with may have been superseded. As a consequence, it can be a challenging time for the *non-expert* to select the "right" copier for their organization. DGS, Procurement & Logistics, State Printing & Duplicating have compiled this guide to assist you in selecting a copier for your application.

It is recommended that you use the step-by-step guidelines to assist in your selection.
An electronic version of the guide has also been compiled in Word for windows format.
Download Hard Copy of Guide (Word format)
Download Hard Copy of Guide (pdf format)

The information in the guide has been assembled from personal knowledge and experience, reference to independent buying guides, supplier information and data gathered in copier replacement projects already completed. It has been constructed in a way that will enable you to logically address the steps necessary to make a more informed decision - giving due consideration to the type and size of machine, the features required, costing analysis and servicing issues.

The guide addresses the most frequently asked questions about copiers:

- When should I changeover our existing copier?
- What features should I look for in a copier?
- What size machine is right for our application?
- How do I work out the cost of operating a copier?
- Should we buy, rent or lease the copier?
- What should I look for in regard to servicing?

The guide also provides a glossary of common terms.
Please note that the scope of this guide is limited to black and white, color copiers only.

If you require further assistance in selecting a copier please do not hesitate to contact DGS, Procurement and Logistics. Approved providers will also assist you in selecting the features that best suit your needs.

Some information in the guide has been compiled after studying a set of independent buying guides on copiers that is published however; copyright protection does not permit reproduction of their guides.

Other Devices:
In addition to the above these guidelines may be applied to Laser Faxes, Color Laser Printers, Scan-to-File devices and Wide-format copiers.

Before you make a choice...

If you are contemplating a networked MFD then you should be aware that DBM IT has review and approval authority. These devices must be approved for use on State of Maryland networks. If you are considering this option then it is advisable to first check that the devices will function appropriately on the network and your IT specialist should be contacted for advice in this regard.

The issues that should be considered when acquiring any network device that scans and/or prints are:

1. Network connectivity.
2. Network security.
3. Software support to fully deploy the devices on the network (print drivers etc.).

Changing over your copier

Changing over you copier - when is the right time?

Unfortunately, there is no simple formula to determine the optimum time when a copier should be changed over for a newer device. However, as a rough guide, it is recommended that a device should be kept for approximately four years and not longer than five years.

This does not preclude devices being kept in service for longer periods - in some respects it can depend on the amount of service (copies) it has done, its reliability, present operating cost and its suitability to meet current needs.

There are a number of factors that should be reviewed when you consider changing over your copier.

The main ones are:

1. Cost considerations

You should regularly review the total cost of operation of your copier. This includes not only the day-to-day copy charge costs but also the rental or capital component of keeping a copier in services.

The following issues need to be considered:

What is the current operating cost of the device?

Would it be cheaper to keep the current one in service or invest in a newer device?
Is there any incumbent charge associated with your present machine? (*i.e. outstanding rental or commitment to the end of term, payout figure if you terminate a contract early?).*
If the changeover of a copier resulted in a higher operational cost would the additional features, generally inherent in newer models, be worth the extra expense?
Would changing over to a digital machine, with the added flexibility to connect this to a network, result in the lowering of secondary overhead costs by improving productivity? *(i.e. reduced labor costs or economies gained by the redirection of prints to a copier).*

For details on working out operational costs see section 4 "Cost Considerations". This section also provides, in spreadsheet format, a modeling tool for determining the net cost per copy of owning your copier.

2. Age and reliability issues

As devices get older they inherently get less reliable. Therefore, even if the device is presently working reliably, it may be worth planning now for a future changeover.

Questions to be addressed are:

What is the age of the current device - if approaching five years will the copy charge cost increase?

Traditional analog copiers were generally supported by guarantee for up to five years after which the copy charge or servicing cost is inflated. Consequently, it may be more economical to change to a new machine at the end of the guarantee period. Further, as copiers are electro-mechanical machines their reliability cans drop-off after the first 4 to 5 years.

Is it starting to become unreliable with increasing number of paper jams, breakdowns and need for constant calls by a service technician?

How many copies has it done?

Obviously, the greater the copy volume, the more the parts are likely to have worn.

3. Technology issues

Most departments have access to a copier and, unless it has been purchased in the past few years, it is likely to be an analog-based ("light lens") machine that has served the copier industry admirably for the past twenty or more years.

However, the office copier has undergone considerable change in the late 1990s and recent technology advances have seen the emergence of digital copiers that first scan, digitize and store the image before reproducing them.

Although analog devices are still being marketed, the advent of the digital copier is changing the industry. As the price differential is now minimal, it is worthwhile when contemplating changing over your copier that you consider the advantages of a digital unit.

As a consequence, would your organization benefit from:

Having a copier that can also act as multifunction devices that scan, print, copy and sometimes fax?

Installing a networked photocopier that doubles as an on-line printer together with the advantages inherent in a modern copier including finishing and stapling units, double sided printing?

Having a networked copier/printer with cheaper operational costs than traditional printers?

Selecting the right features

When purchasing a new copier you will be confronted with a plethora of features and specifications that can make the selection process somewhat overwhelming. Clearly, you need to do some research into what is available on the market. However, selection is a less daunting if you first do some homework on determining what you want from a copier and how it is to be used.

The selection of features can be broken down as follows:
Decide on analog versus a digital unit.
Determine the size and speed of machine required.
Work out what paper delivery / capacity you need.
Select the type of optional accessory (finishing / sorting / stapling) features required.
Determine what tasks are special to your area of operation and what are the most important features required to meet these tasks - *i.e. determine what features are necessary versus what are "nice to have"*

Assuming you are looking for a digital device, determine whether you want to have this connected to the network or work as a standalone unit.

1. Analog versus Digital

There is a general belief that the era of the traditional analog (light lens) copier is on the decline and there is no doubt that copier manufacturers are unlikely to invest any more research and development funding into analog technology.

Despite this, analog technology machines are mature and reliable products that are still marginally cheaper (approx. 10% in 2000) than their digital counterparts. If you do not require the added functionality available from digital copiers then perhaps an analog copier may still serve your needs and provide the most cost effective solution.

However, with due consideration to the above, DGS promotes digital machines over analog because it enables us to take full advantage of the technology trend. In particular, the ability to connect a digital copier to the network thus provides a more flexible and cost effective output device than a traditional on-line printer.

Keep in mind however, that not all digital copiers are capable of being networked and, conversely, a digital copier does not have to be networked to deliver some of their inherent benefits.

Benefits of digital machines:
The most fundamental benefit of digital technology in copiers, apart from the ability to connect most digital machines to a network, is the way their "**scan once / print many**" system of operation.

Analog units copy the originals placed in a document feeder, one page at a time, and then deposit multiple copies of each page in an output tray or sorter. If the number of copies exceeds the capacity of the sorter then you have to re-cycle the originals through the document feeder again. Further, the copies can only be removed from the sorter once all pages have been copied.

By contrast, a digital copier will firstly scan in all originals and store the digitized image in memory. It then reproduces the copies, one set at a time. The copied sets are then stacked, set-by-set, in the finishing (sorting) unit. This allows you to make very long, non-stop runs of multi-page sets, as you are not limited by a bin capacity, as is the case inherent in analog units with sorters.

Once scanned, the originals are no longer required and you can walk away from the copier with your originals at a very early stage. From the stored image, a digital copier can reproduce any number of sets and collate them electronically - this removes the need for a sorter as the copied sets are deposited, one set at a time, in the output tray.

Where multiple sets are required, a digital copier generally uses an *offset stacking* technique to separate the collated documents that can also be stapled automatically as they emerge from the unit. By contrast, staplers on analog units have to wait until all pages have been copied and collated before they can be stapled thus adding to the total time of completing a job.

Some other benefits of digital copiers are:

The ability to electronically send originals over a network resulting in all copies (prints) being first generation outputs rather than second generation on scanned images;

A reduced level of noise because once the originals have been scanned the copying/printing phase is generally quieter. This contrasts to analog machines with recirculating document feeders that are traditionally a noisy part of the cycle.

2. Multifunction devices

The introduction of digital technology has spurned the development and marketing of multifunction devices that can deliver more than just copies. These devices, apart from the obvious benefit of acting as an on-line printer, can also serve as a scanner and a facsimile unit.

Multi-function devices may, on first analysis, appear to be an attractive option but you should be aware of the advantages and sometimes disadvantages of multi-function devices. The advantages are very much promoted by the smart sales representative but you should be careful to ensure that what you get fits your work environment.

Advantages / disadvantages of multifunction devices

Advantages of multi-function devices

The main advantage of a multi-function device is its compactness, which enables it to potentially replace a copier, fax, scanner and printer in an office. This may be of benefit where space is an issue.

A second benefit is obviously cost. Rolling all functions into one machine has the potential to lower the capital cost of equipping a modern office. In addition, if the copy charge rate of a multifunction device is pitched at typical copier rates (i.e. below one cent per copy) then the overall operating cost, compared to operating costs for printers and fax machines, may represent a considerable saving. The potential cost savings should, however, is weighed against some of the disadvantages listed below.

Multi-function devices are best suited for small office environments where there are a relatively small number of users and there is less chance of conflict in the operating mode at any particular time.

Disadvantages of multi-function devices

One drawback to multi-function devices, that has been reported, is the conflict that can occur, particularly if installed in a large office with a relatively large number of users. If the device is used as a printer and copier then your desire to use it as a copier can be delayed if it is busy producing a large print run. Similarly, if you want to use it to send an outgoing fax, you might be frustrated if it is being used as a copier.

By comparison, modern fax units are relatively cheap and it might be an advantage to persist with a stand-alone fax to service a large office environment. This can also minimize the risk of losing important incoming documents if the device is out of service because of a paper jam or other major problem - incidents that are much more prevalent in copier type devices. Whereas you can resend a print job that you have initiated, you might not even know if an incoming fax has been lost!

Multifunction devices also come with scanning features but again, desktop scanners are relatively cheap devices costing only a few hundred dollars and therefore a stand-alone unit might be a worthwhile alternative. Irrespective, to be fully useful, scanners should come with OCR (Optical Character Reading) software in order to convert graphics to text. Not all multi-function devices come equipped with OCR software and you may have to purchase it separately.

In summary, the multifunction device, although they can be highly useful in some offices, may not turn out to be all you expect of it in *your* office environment. Consequently, you should carefully analyze your work patterns before committing to an all-in-one device. At best, you might want to just network the device and use it as an on-line printer / copier and leave the scanning and faxing to traditional devices.

3. Size and speed issues

When endeavoring to select the "right" sized unit for your organization it is helpful to know the current **monthly copy volume** of copies done on your present copier. Reviewing your copy records for the past 12 months and working out a monthly average can best acquire this?

If you do not keep regular records then this information may be obtained by reviewing recent invoices received from your current supplier. These invoices generally cover a copy charge and therefore indicate the number of copies done in the billing period. You will probably need to average these over a 6 or 12-month period to get a reasonably accurate monthly figure.

The Copy Cost Calculator includes a spreadsheet that assists in determining your present monthly copy volume.

In order to best match your copier volume to a copier size / speed; refer to the full section on "**Size and speed issues**" in section 3 of this guide. You also might like to consider a slower unit to be a reasonable replacement option.

4. Paper capacity

Most modern copiers have a number of paper feed trays to accommodate different size paper (say A4 and A3) or to deliver various color sheets. Further, most copiers now tend to have at least one large capacity bin, that takes upwards of 1000 to 5000 sheets, and an A4R tray to cover reduction of A3 originals to A4 copies.

There is no definitive formula for determining the optimum paper capacity of a copier however, to determine the capacity of the largest paper tray or bin (ie. the one that delivers paper for the most common copying task - usually A4 size) then it is reasonable to apply the following rule of thumb (ie. this estimate assumes single sided copying).

From the average monthly volume, determine the typical daily volume by dividing the monthly total by 20 *(ie. assumes average of 20 working days per month).*

Assuming that there will be peaks and troughs in demand, and that you will not want to have someone check and refill the copier more than once daily, then multiply the daily average figure by 1.5 in order to provide a reasonable buffer. Round the number up to the nearest multiple of 500 pages (ie. one ream) to a maximum of 5000 sheets.

The calculated figure gives you a good estimate of the minimum capacity of the main bin or tray.
If the machine you are contemplating does not have a large capacity feed unit to match the calculated capacity it is a fair bet that the machine is not fast / large enough for your needs.

Do not worry if you cannot exactly match a paper feed unit with your calculation but use this as a guide to what you do require. If it within a ± 25% range then it will probably suffice - but realize that if it is smaller you may just have to fill it more often.

If the calculation in 3 below exceeds 5000 sheets then you are doing some serious copying and will undoubtedly want an operator to be on hand to recharge the LCT regularly. Most copiers are limited in their A4 capacity to about 5000 sheets.

Examples:

A). Average monthly volume = 30,000 copies
Capacity = (30,000/20) x 1.5
= 2,250
Round up to 2500 sheets

B). Average monthly volume = 10,000 copies
Capacity = (10,000/20) x 1.5
= 750
Round up to 1000 sheets

5. Output features - Sorters / Finishers

One of the most useful and productive enhancements to the modern copier is the evolution of finishing devices over the traditional sorter.

Sorters are usually available in 10, 20 or 40 bin models that are restricted to a capacity of about 50 sheets. They are generally confined to the domain of the analog copier and are being replaced as an output device on digital copiers by modern finishing units.

With sorters it was necessary, at acquisition to select a bin capacity (if the option was available in your chosen model) that best suited your output collating / job run requirements and budget. It is fair to say that *"Murphy's Law"* prevailed and the capacity was often never quite big enough for the job on hand - thus requiring the originals to be re-loaded in the document feeder once the required copies exceeded the sorter bin capacity!

If stapling was required, this had to be done downstream of the sorter after all pages had been collated. This was a relatively slow process compared to finisher/stapling units. Finishers have a lot less

limitations and therefore inherently deliver greater productivity. A finisher collates output copies by offset stacking the sets. This is sometimes called "electronic sorting or stacking" where each alternate set are separated by laterally shifting them by about 1 centimeter in the output tray. If the sets are to be stapled then the finisher does this as each set exits the finisher and eliminates the need for separating sets by offsetting. Further, most finishers offer a range of stapling options and positions, including center "saddle stitching" for center folded booklets.

Some finishers also offer the option of multiple output bins. These are not to be confused with the bins of a traditional sorter that separate sets but are used to separate jobs that may have been printed across a network from different users. Network software usually permits selection of the output bin, if multiple bins are available.

The more sophisticated finishers allow insertion of pre-printed, cardboard covers. These covers can be relatively thick, as they do not pass through the copier's fusing rollers. Such features therefore facilitate the production of high quality publications that may have previously been sent out to a commercial printer or an in-house quick copy operation.

In selecting the most appropriate output device it will generally come down to a few questions -
If it is an analog machine, you will require a sorter and you need to determine the bin size - 20 bins is typical on most mid-range copiers.

If it is a digital copier then you first have to determine if you need a finisher at all. Most digital machines have the finisher as an option and can effectively separate / collate the copies by using electronic stacking as they leave the output unit. If this satisfies your needs it will certainly save you money.

If you require the output features of a finisher unit it is also worth going the extra step to add the stapling unit as this can save a great deal of time for minimal extra cost.

If considering one of the more sophisticated finishing units that deliver saddle stitching, multiple output bins etc. you need to be firm in your mind that these features will be regularly used and worth any extra cost versus sending the odd "publishing" job out to a commercial vendor or to a in-house quick copy operation.

6. Copier features

Selecting the "most appropriate features" is one of the more difficult tasks and in the end; the final choice(s) may end up coming down to a subjective personal preference. However, you should endeavor to consider such requirements / features as:

1. The display panel.

   Do you find one easier or more intuitive to use?

   Is it touch screen or buttons?

   Is there a Help feature?

2. Do you do a lot of hole punching of copied material?

   Some copiers do automatic hole punching that can save you a lot of time.

3. Do you require more sophisticated finishing or automatic stapling?

Most digital copiers can be fitted with a finishing/ stapling unit. If not required, then the copier can be acquired without a finisher/sorter and rely on offset stacking to collate/separate copies, thus saving you money.

4. Do you require scanning capability?

   Not all copiers can scan back to a file but is it a feature you really will use very often? If it comes with the machine of your choice, then fine, but if not it might be more economical to buy a low priced desktop scanner.

5. Toner recharging.

   The method of replenishing the toner is often overlooked by the person that selects a copier as it is generally not that person who has the chore of doing it!
   Look at how easy / clean versus difficult / messy it is to changeover the toner cartridge.

6. Reduction / Enlargement capability.

   What range of reduction or enlargement can it handle?

   Does it meet your needs of at least copying your largest originals down to A4 size?

7. Platen / document feeder capacity and size.

   Can the copier handle your largest original document?

   What is the capacity of the document feeder - does it handle original document stacks that you typically copy?

8. PIN access and secure printing.

   Some units have P.I.N. number access features that provide control over access and allow some basic data on usage for cost recovery purposes. Networked digital copiers usually have a "secure print" option that allows a confidential file to be sent to the copier but not printed until released the sender releases this with a code at the copier.

The scope of optional accessory features is almost endless but it will be helpful to acquaint yourself with the normal range on offer by most suppliers. Before consulting a supplier it will be useful to have a reasonably firm view of what you require versus what would be "nice to have".

7. Connecting to a network

Most digital copiers being marketed today have the ability to be connected, via an interface card or unit, to a network. It is beyond the scope of this guide (and most users) to cover all technical aspects of network connectivity so it is essential that you seek the advice of an IT specialist, if considering a networked device.

DGS, Procurement and Logistics, State Printing & Duplicating has checked all of the digital (multifunction device) copiers on offer from our approved providers and will continue to do so as new models evolve.

When selecting a digital copier you may not initially consider, or want to go to the expense of, interfacing it to a network. However, it a good policy to ensure there is an option to add this later.

There are advantages to connecting a copier to a network. A network copier acting as a printer can greatly reduce printing costs and increase productivity by allowing automatic downloading and production of multiple, first generation copies. This saves time over the old method of printing out originals; walking them to a copier, document feeding the originals and collating the output, all of which are second-generation copies.

Size and speed issues: Matching copy volumes to copier speeds

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Consider a slower unit to be a reasonable option.

Whereas your current monthly volume is the best indicator to the size of unit required, there are some good reasons why you may wish to consider a slower copier than your present unit.

Despite the advantages offered by digital units, that can be set up as networked printers, there has been a general shift in work from copiers to printers as staff tend to run off multiple copies of documents on their "local" printer resulting in lower copying numbers. Consequently, a slightly lower capacity unit may suit your future needs. *(Conversely, if you are contemplating setting up a networked copier, in order to drive a change away from the more costly outputting to a printer, then you may have to estimate a potential increase in copier volume).*

The growing access to the Internet as a delivery medium in lieu of printed page. This has generally had an effect on lowering copier volumes over the past few years. This trend is certain to continue.

The increased productivity of today's copiers compared to their predecessors. The "scan once - print many" feature of a digital copier results in effectively greater throughput and productivity on long runs.

Further enhancements have reduced or eliminated the loss of speed when doing double sided copying. Larger paper bins, automatic stapling and endless stacking have also contributed to greater productivity. This increase in productivity could mean that a slightly slower unit than your current unit may meet your future needs.

Optional accessory features that were only once available in the high volume copier range are now readily available in the lower end units. As a consequence, you do not have to unnecessarily oversize in order to deliver the required functionality.

With these factors in mind, you could seriously consider a reduction of about 5 to 10 copies/minute in copier speed. The savings may well be very attractive!

Recommended copy volumes.

All manufacturers list maximum recommended copy volumes, but these are often very optimistic and in some cases are arbitrary and misleading - so beware!

Beware of recommended maximum copy volumes.

Vendors, because of "marketing pressure", are not always honest in their portrayal of what is a realistic figure on recommended volumes. In some regards, they cannot afford to be!
For example, if one supplier (X) is honest and lists a realistic figure but another (Y) has a much-inflated maximum volume figure for the same speed unit, it can incorrectly portray that Y has a more rugged unit. As a consequence, it is not uncommon for Y's sales representative to then use this to cast doubt about the robustness X's unit. It is therefore not uncommon for maximum volumes to creep up as a result of this marketing pressure. The net result is that the figures become unrealistic and meaningless.

Faster may not mean more heavy-duty.

There is often a misleading notion that the "faster the unit the better" portraying that the faster units can handle a bigger monthly volume. Whereas, this is generally true you should be aware that some manufacturers produce exactly the same unit for their mid-volume range (say 30-35 cpm) as they do for there higher volume range (say 40-45 cpm). They just speed up the unit to match the perceived need of the market!

Conversely, some mid-range copiers are slowed down versions of the higher speed models and therefore can represent a very robust option and a good buy.

You should also be wary of well-intentioned sales representatives who are usually quick to point out that if your copy volume has increased to a point where a machine should be traded-up for a faster machine. Do not be pressured into upgrading - you will be the best judge of when a machine is not meeting your needs.

One final factor worthy of consideration when choosing a unit speed is that copier service technicians often report that machines which are run more heavily usually make more copies between service calls - ie. higher mean-time-between failures (MTBF).

In other words, like cars and other electro-mechanical equipment, keeping the unit exercised is a healthy practice! On this basis it might be good practice to keep a good mid-volume copier running at close to its optimum volume rather than nursing a more expensive and faster unit.

Guideline for matching Speed with Volume

Calculating your monthly copy volume.

When endeavoring to select the "right" sized machine for your organization it is helpful to know the current **monthly copy volume** of copies done on your present copier. This can best be acquired by reviewing your copy records for the past 12 months and working out a monthly average.

If you do not keep regular records then this information may be obtained by reviewing recent invoices received from your current supplier. These invoices generally cover a copy charge and therefore indicate the number of copies done in the billing period. You will probably need to average these over a 6 or 12 month period to get a reasonably accurate monthly figure.

Selecting the right speed unit.

The following table has been compiled from available copier data and serves as an independent reference guide for matching copy volumes to speed.

The data is generalized and may not strictly apply to your circumstance, but it does give a reasonable indication of a unit's capacity given a regular usage pattern.

If you have peaks and troughs in your usage *(ie. 25,000 copies per month of which 20,000 is run in that last week)* then you will probably want to ensure the unit can cope with the heavy load in the last week and go up a notch in speed.

Matching Copy Volumes to Speed Table

Copier Range	Average Monthly Volume (copies/month)	Recommended Speed Range (ppm)	Comments
Low	less than 8,000	up to 20 ppm	Be careful - very low speed copiers/multifunction devices are only suitable as desktop machines doing a few hundred copies/ month
Mid	8,000 - 10,000	20 - 25 ppm	Most copiers in this range now come with advanced options such as document feeders, sorters, finishers etc.
Mid	10,000 - 20,000	25 - 35 ppm	If speed is a priority, then keep an eye on the more economically priced 40 ppm machines
Mid	20,000 - 30,000	35 - 45 ppm	Some vendors promote a 50 -60 ppm machine for this range but this isn't really necessary
Mid	30,000 - 40,000	45 - 49 ppm	Upper mid-volume territory. Consider 50-60 ppm if speed is a priority
High		50 - 60 ppm	If on a tight budget or speed is not a priority, then consider a 45 - 49 ppm
High	40,000 - 75,000	50 - 90 ppm	The 50-60 ppm recommended above can go higher than 40,000 copies/month. However, speed will be the determining factor.
High	75,000 - 100,000	75 - 100 ppm	This volume is in the high volume usage range. Analyze all the features carefully!

Notes:
The guide above does not cover color copiers.
The DGS has approved providers for copiers up to 100 ppm.
If you are considering machines in the high volume range you should do a careful analysis of your needs and always keep in mind the option of using one of the in-house quick copy sections for handling your large copy runs. This will enable you to purchase a lower volume and cheaper machine for your convenience copying.

DGS Procurement and Logistics, State Printing & Duplicating is available to provide any advice and/or assistance on purchasing or leasing copiers.

Digital machines - improved productivity at lower speeds.

The benefits of digital machines are covered in section 2.

The *scan once / print many* mode of copying and the use of finishers or offset stacking all add to the efficiency of digital copiers.

This efficiency / productivity gain can result in multi-page /multi-copy job being completed in less time on digital copier when compared to their analog equivalent. An additional bonus comes with the digital machine purchased with finisher/stapler as the automatic stapling greatly reduces the tedium of emptying sorter bins and stapling sets by hand.

As a consequence of the above factors, it becomes a real option to consider a slightly slower paced digital unit when replacing your current analog copier as this may be done without any real trade-off in throughput.

First copy time.

Most manufacturers list the time to produce the first copy in their standard specification table. This is the time it takes for the first copy to appear in the output tray or sorter. First copy time can vary markedly between units.

The productivity advantage of a digital copier, as outlined in the above section, loses a slight edge when used for single page copying. As a general rule, digital copiers have slower **first copy times** than their analog equivalents.

When comparing seemingly equivalent units from a number of manufacturers the first copy speed may be a differentiating factor that should be considered. Users will become frustrated if it takes too long to just copy a single page!

Warm-up time.

Although it should not be weighted too highly when comparing specifications of copiers it may be useful to consider the warm-up times listed. This is the time it takes for the unit being in a ready state to produce a copy after first turning on the power.

Most units have some form of energy saving mode that automatically shuts down the copier if left idle for a set period. The warm-up time from this mode may also be of importance.

Cost considerations - working out the Total Cost of Ownership

---

It is fair to say that many organizations do not really know what their copier costs them to operate - yet it is one of the most used and costly commodities in a modern office! The information on this page should help in establishing the cost of your current copier or assist in determining the cost of a new copier.

Total Cost of Ownership (TCO).

When planning for a replacement copier it is advisable to do a few calculations that will give an indication of the Total Cost of Ownership (TCO) of the unit over the planned life cycle and to translate this to an effective net cost per copy.

Such calculations will enable you to:

1. Compare the cost of operating your existing copier against the anticipated cost of the new machine;

2. Will provide a means of comparing the range of machines on offer from approved suppliers;

3. Give an indication as to the suitability, in economic terms, of the chosen copier for your organization;

4. Determine the relative cost of different financing options (ie. rental, purchase, lease, or "click charge" cost per copy or flat rate copy plans).

Components that make up the total cost.

Fundamentally, there are two major components that contribute to the cost of owning and operating a photocopier.

Capital Component + Copy Charge.

A. Capital Component.

This can either be:

- The purchase price of the copier plus options;
- The rental cost, spread over the full rental term;
- The leasing cost, spread over the lease term.
- In the case of a purchased item, it is advisable to spread this over the anticipated or planned "life cycle" of the copier. Generally this will be three to five years. A good rule is to plan for four years.

Financed options (rent or lease)

For leased or rented copiers, there is a financing component to be considered that involves interest rate factors and allowances for the residual value of the copier at the end of the rental/lease period.

Rental options generally require you to sign up for a fixed period. For a shorter period (say 3 years) the residual value, generally expressed as a percentage of the purchase price, is higher and the total repayments over the full term may be less than the full purchase price because the supplier can generally refurbish and then *re-market* the copier and extend their return on the asset.

For longer rental terms (say 5 years) the residual is generally very low as the unit is probably close to its useful life. As a consequence, the total repayments over the term would normally exceed the purchase price when taking into account interest rates.

As a very rough rule, the cost of renting a unit is of the order of:

Term (months)	Charge (per $1000 of purchase price)
36	$41 per month
48	$35 per month
60	$31 per month

Of course these rates vary according to financing company and interest rates.

Leasing is slightly different to rental in that the customer is generally required to pay out the residual value and assume ownership of the copier at the end of term.

A more detailed description of financing options is covered in the next section- Financing options.

B. Copy Charge (maintenance) Component.

Most copier suppliers charge a copy charge rate (ie. cents per copy) that is applied against each copy done on the machine. This usually covers the cost of toner, parts, drums and general preventative maintenance. The copy charge is generally billed separately (typically monthly) by invoices raised against periodic meter readings.

The copy charge does not include the cost of paper.

Typically, if the capital component is covered separately, as distinct to "click charge" agreements, the copy charge will be of the order of 0.8 to 1.5 cents per copy for most machines.

Copy Plan Agreements (click charge).

Most copier suppliers offer an alternative method of financing the cost of owning and operating a copier. This is by establishing a Copy Plan Agreement (commonly called a "click charge").

The mechanism for establishing a Copy Plan Agreement is relatively simple.

The supplier effectively adds:

1. The total cost of renting the capital component of the copier, over the full term, *and the* copy charge for the total number of copies contracted to be run over the full term.
2. They then divide the sum of these two components by the total number of copies to arrive at a net cost per copy (click charge rate).

   The crucial factor in determining the click charge is the total number of copies.

For further details on click charges read the Copy Plan agreements section under Financing Options.

Working out the TCO.

The cost analysis model enables you take figures from suppliers to determine the capital and operating cost of running a copier. It also provides rental / leasing figures as well as a tool for calculating your average monthly volume.

The net cost per copy will depend on a number of factors including:

1. The correct matching of copy volume to speed (size) of machine.
2. Whether the photocopier is to be networked and includes all connectivity costs.
3. What features are included on the copier (paper bins, stapling units etc.)?
4. The planned life cycle of the copier (ie. the longer you run it to amortize the capital component cost, the cheaper the net cost per copy). It is advised that you plan for a 4 or 5-year term.

An acceptable net cost per copy (excluding paper) is between 2.0 and 3.0 cents per copy (excluding options such as integrated fax machines etc.).

Aim for a net cost per copy of about 2.5 cents.

To a large extent, it is hard to generalize about certain makes or models being intrinsically cheaper or more expensive than others. Essentially, you have to look at each offering from the

supplier and determine the true TCO yourself. Offerings from dealers can vary dependent on their need to secure a deal.

Although the States approved suppliers have little room to maneuver on the prices that they have contracted. You should treat it as a buyer's market and be prepared to negotiate on deals.

The calculator first establishes the average monthly volume and then uses this factor, along with the cost of the copier plus ancillary features, to determine the net cost per copy (excluding paper). It also provides comparative figures for either the rental, purchase or lease options.

What is a reasonable cost?

The best benchmark that can be established to compare copier-operating costs is the net cost per copy. This is the effective cost per copy when spreading the total number of copies to be run over the full term or life of a machine (ie. capital + copy charge).

The net cost per copy (covering capital + operating cost) can be determined using any type of **Copier Cost Calculator**.

ENTERPRISE OUTPUT STRATEGY WITH DEVICE CONSOLIDATION

Device consolidation is one of the ways to reduce costs in your IT environment, and the cost reduction can be substantial. If you spend one to three percent of revenue on output consider the possibilities for savings.

You can implement device consolidation in two ways:

- Reduce the number of devices by replacing older or standalone printers, copiers and fax machines with networked multifunction devices (MFDs) that print, scan, copy and fax. With automated duplex, you can conserve paper. And with a networked, consolidated approach, you can collect utilization information and manage assets more effectively.

- Eliminate high-cost desktop inkjet printers.
    - Supplies for personal devices can be two to three times higher than workgroup devices.
    - Personal printers can result in more printers to support, maintain and track.

DIRECT HARDCOPY OUTPUT TO MULTIFUNCTION DEVICES

With networked multifunction devices (MFDs), you can place vital, versatile output functions near users. MFDs are scalable to match changing user requirements within workgroups and departments. Device consolidation through the use of MFD devices can help you reduce costs in the following ways:

- Eliminates the management and expense of multiple, unrelated personal printers

- Displaces more expensive specialty printers

- Removes older, less reliable devices

- Reduces toner, maintenance, space and utilities costs

DECREASE THE NUMBER OF PRINTED PAGES

With networked MFDs, you can pursue electronic communication options to optimize workflow and further reduce costs by reducing the number of printed pages.

- Enable scan to e-mail to minimize fax and mail costs

- Utilize duplex and multi-up printing to reduce paper and toner consumption.

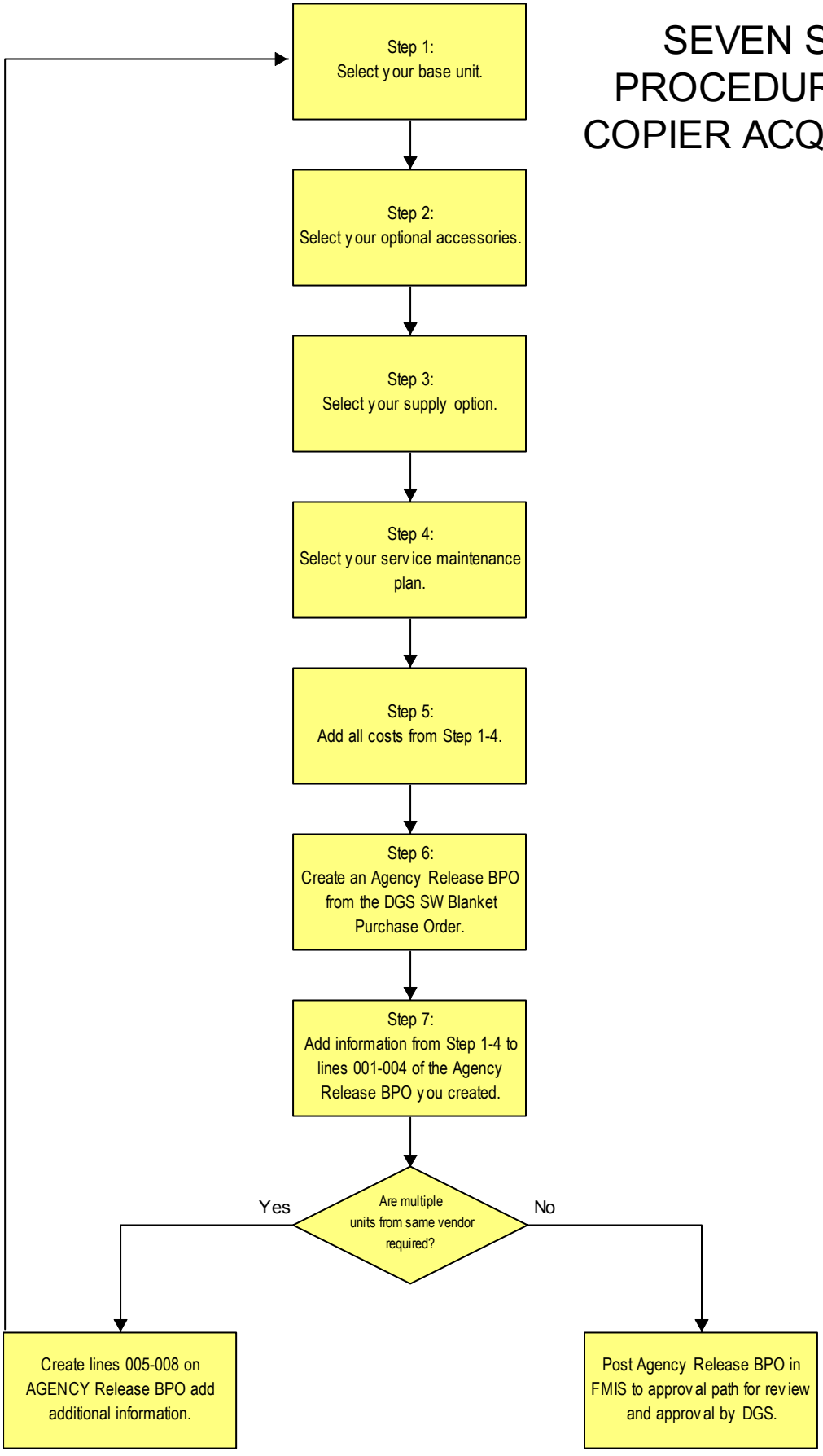
- Implement electronic forms to reduce forms costs and enhance output with bar codes and graphics

- Enable documents on demand to save time

GAIN CONTROL OF COLOR PRINTING

The use of personal inkjet printers for short-run color jobs can provide quick turnaround, but operating and maintenance costs can be high. Place color printers on your network, and you can satisfy users with high quality and robust functionality. At the same time, color printers help you protect sensitive information through security features such as encryption and restrict color printing through access controls. As a component of your enterprise output strategy, color laser printing is more affordable and versatile than ever.

SEVEN STEP PROCEDURE FOR COPIER ACQUISITION



CREATING A REFERENCE BLANKET PURCHASE ORDER AGAINST THE STATEWIDE PHOTOCOPIER CONTRACT

1. **LINK TO** the **2342**, Blanket Purchase Order screen.

2. **TYPE** the Statewide Photocopier contract **BPO NUMBER** of the company your are placing your order with in the **BPO/CONTRACT ID** field and **PRESS <ENTER>**. The system retrieves and displays the BPO information.

3. If the **F5** at the bottom of the screen **reads F5-RENEW/REF**, **proceed to STEP 4**. **If not, PRESS** the **<F4>** key to display F5-RENEW/REF.

4. **TAB** to the **REFERENCE** field located in the lower right portion of the screen. **CHANGE** the **N** to **Y**, then **PRESS the <F5> key**.

   The system duplicates the **BPO** and a new **BPO/CONTRACT ID** is populated. Upon creating the Reference BPO, the following message will appear at the bottom of the screen:

   "BPO 001BXXXXXX SUCCESSFULLY CREATED REFERENCE 001BXXXXXX"

5. **TAB** to the **PURCHASING TYPE** and **KEY IN AGENCY DESIGNATED CODE** or use the default code, **"BP"**.

6. **TAB** to the **BUYER ID** field and **KEY IN YOUR AGENCY'S BUYER'S CODE**.

7. **TAB** to the **EST CONTRACT AMT** field and delete/erase the dollar amount.

8. **TAB** to the **EFFECTIVE DATE** field and **TYPE IN BEGINNING DATE OF BPO** (the system check the effective date when posting a purchase order release against the contract; an error will occur if the purchase Create Date is prior to the effective date).

9. **TAB** to the **EXPIRATION DATE** field and **TYPE IN A DATE** (five years for effective date).

10. **PRESS** the **<F10>** key to save.

11. **PRESS** the **<HOME>** key to move to the **LINK TO** field. **TYPE IN 2348** and **PRESS** the **<F9>** key. The system moves to the Blanket Purchase Order Detail screen.

12. **TAB** to the **CONTRACT AMOUNT** field and **KEY IN** your **CONTRACT AMOUNT**.

13. **TAB** to the **UNIT COST** and **CHANGE** to your contract amount, press the **<F10>** key to save.

14. To delete BPO lines, **TAB** to the **Selection Column** and **TYPE** in an **S** next to the line you are deleting, **PRESS** the **<F3>** key to delete. Repeat if necessary.

15. **PRESS** the **<Pause>** key twice to return to the Blanket Purchase Order screen (2342).

16. To clear out terms from the original BPO and add new terms, **CHECK** to make sure the **F8** at the bottom of the screen **reads F8-TERMS**. **If not, press** the **<F4>** key. If so, proceed to the next step.

17. **PRESS F8**, the system transfers to the Specification/Terms Selection screen (2126). The line number defaults to 000.

18. To delete the block **TAB** to the right of the words **BLOCK FUNCTION** and type in **"DLET"**. Next **PRESS <F4>**. **PRESS F8** to move to the next block. Repeat if necessary.

19. To add standard text, **TAB** to the right of the words **BLOCK FUNCTION** and type in **"ZCOPY"**. Next **PRESS <F4>**, fill in the missing information. **PRESS <F10>** to save.

20. To clear out the footer terms from the original BPO and add new terms to the individual project, **CHANGE LINE NUMBER** to **999** and **PRESS <ENTER>**.

21. To delete text, **TAB** to the right of the words **BLOCK FUNCTION** and **TYPE** in **"DLET"**. Next **PRESS <F4>**. **PRESS F8** to move to the next block. Repeat if necessary.

22. To add standard text, **TAB** to the right of the words **BLOCK FUNCTION** and **TYPE** in **"ZT78C"**. Next **PRESS <F4>** then fill in the missing information. **PRESS <F10>** to save.

23. **PRESS** the **<PAUSE>** key to return to the Blanket Purchase Order screen (2342).

24. To update the Additional Elements (2353) screen, check to make sure the **F8** at the bottom of the screen **reads F8-Elem**. If not, **PRESS** the **<F4>** key. If so, proceed to the next step.

25. **PRESS F8**, the system transfers to the Contract Additional Elements screen.

26. **TAB** to **CONTACT ADMINISTR** and **TYPE** in "Dwyane Lee"

27. **TAB** to **PROCURMENT OFFICER** and **TYPE** in your agency buyer's name.

28. **TAB** to **ADVERTISE DATE** and wipe out date.

29. **TAB** to **AWARD DATE** and **TYPE** in **TODAY'S DATE**.

30. **TAB** to **AWARD AUTH** and **TYPE** in **"DGS".**

31. **TAB** to DESC field and **TYPE** in **"PHOTOCOPIER"**.

32. **PRESS F10** to save.

33. **PRESS <Pause>** to return to the Blanket Purchase Order Header screen (2342).

34. To define the BPO SECURITY, **CHECK** to make sure the **F2** at the bottom of the screen reads **F2-AUTH USERS**. If not, **PRESS** the **<F4>** key. If so, proceed to the next step.

35. Press F2, the system transfers to the Blanket Purchase Order Security screen.

36. **TAB** to the **USER** field, **KEY IN ********* (eight asterisks). Next, **KEY IN** the **CONTRACT VALUE** in the **CALL AUTHORIZATION** field. **PRESS F10** to save.

37. **PRESS <Pause>** to return to the Blanket Purchase Order Header screen (2342).

38. **TAB** to the **ACTION INDICATOR** field. **TYPE** in a **"P"**, **PRESS <F10>** to save.
Once posted the document routes through your agency's approval path and then forwards to DGS to Myrna Harris for approval. You may reach her at 410-767-3586.
Please Note: *As before, subsequent purchase order releases will be necessary each fiscal year for the remaining years on the contract and since the purchase order is an in-house accounting document, a copy of your BPO should be sent to the vendor.*

FMIS 2342 Screen DGS Statewide BPO

PCHL2342 V4.1 MD PRD ADVANCED PURCHASING/INVENTORY 11/08/2006 12:47 PM
LINK TO: BLANKET PURCHASE ORDER

BPO/CONTRACT ID : 001B7900157 DEPT : 00125 NOTE PAD : N
PURCHASING TYPE : SW BID ID : 001IT816335 AWARD : 016
ACTION INDICATOR: P INTERFACE TYPE : BP DGS BPO (Y/N): Y
STATUS : POST DBM BPO (Y/N): N
GSA CONTRACT NO : POST DATE : 10/13/2006
CONTRACT AMOUNT : EFFECTIVE DATE : 10/13/2006
EST CONTRACT AMT: 950,000.00 EXPIRATION DATE : 10/12/2011
REMAINING VALUE : FISCAL EFF DATE : 10/12/2006
BUYER ID: ZDXL NAME: DWYANE LEE PHONE: 4107674425 EXT:
VENDOR: 1160468020 XEROX
ADDRESS : 409 WASHINGTON AVE
TOWSON, MD 21204
MULTI-VENDOR : N
MULTI-YEAR : Y COMMODITY CTRL (F/P): F LEVEL (1/2/3): MINORITY SUB: N
RENEWAL : OPTIONS :
ORIGINAL BPO : OPTION MAX: 0 ORIGINAL AMT:

REFERENCE : N ALLOW REF (Y/N): Y LIMIT REF EXP DT (Y/N) N
F1-HELP F2-COPY BPO F3-DEL F4-OTHER KEYS F5-NEXT F6-VIEW DOC F7-VEN SEL
F8-ELEM F9-LINK F10-SAVE F11-VEN SELECT F12-SEL SUB ENTER-INQUIRE CL-EXIT

The agency reference BPO should include all lines required to procure this commodity with detailed descriptions.

Agency Release BPO created from the Statewide BPO

PCHL2342 V4.1 MD PRD ADVANCED PURCHASING/INVENTORY 11/09/2006 9:29 AM
LINK TO: BLANKET PURCHASE ORDER

BPO/CONTRACT ID : 001B7900420 DEPT : 00125 NOTE PAD : N
PURCHASING TYPE : SW BID ID : AWARD :
ACTION INDICATOR: N INTERFACE TYPE : BP DGS BPO (Y/N): N
STATUS : NOPT DBM BPO (Y/N): N
GSA CONTRACT NO : POST DATE :
CONTRACT AMOUNT : EFFECTIVE DATE : 10/13/2006
EST CONTRACT AMT: 950,000.00 EXPIRATION DATE : 10/12/2011
REMAINING VALUE : FISCAL EFF DATE : 10/12/2006
BUYER ID: ZDXL NAME: DWYANE LEE PHONE: 4107674425 EXT:
VENDOR: 1160468020 XEROX
ADDRESS : 409 WASHINGTON AVE
TOWSON, MD 21204
MULTI-VENDOR : N
MULTI-YEAR : Y COMMODITY CTRL (F/P): F LEVEL (1/2/3): MINORITY SUB: N
RENEWAL : OPTIONS :
ORIGINAL BPO : 001B7900157 OPTION MAX: ORIGINAL AMT: 950,000.00

REFERENCE : Y ALLOW REF (Y/N): Y LIMIT REF EXP DT (Y/N) N
F1-HELP F2-AUTH USERS F3-DEL F4-OTHER KEYS F5-RENEW/REF F6-VIEW RLS
F7-BPO AUX
F8-TERMS F9-LINK F10-SAVE F11-VIEW ACCTG F12-PRINT ENTER-INQUIRE
CL-EXIT
BPO 001B7900157 SUCCESSFULLY CREATED REFERENCE 001B7900420

Creating your line items

```
PCHL2348 V4.1 MD PRD          ADVANCED PURCHASING/INVENTORY   11/09/2006   9:33 AM
LINK TO:                      BLANKET PURCHASE ORDER DETAIL

CONTRACT ID : 001B7900420          CONTRACT AMOUNT:                A          I/D:

VENDOR ID  :  1160468020     XEROX
MULT VENDORS:        N       (Y/N)          F/P:                AMOUNT:
PCT:
S      COMMODITY ID          LINE ORIG-LINE MAX QUANTITY        UNIT COST    MAX COST
COMMODITY DESCRIPTION
       01621                 0001           0001
       PHOTOCOPIER CONTRACT
       01621                 0002           0002
       PHOTOCOPIER CONTRACT
       01621                 0003           0003
       PHOTOCOPIER CONTRACT
       01621                 0004           0004
       PHOTOCOPIER CONTRACT
s      01621                 0005           0005
       PHOTOCOPIER CONTRACT                       Delete all Unnecessary lines
s      01621                 0006           0006
       PHOTOCOPIER CONTRACT

F1-HELP  F2-SELECT  F3-DELETE  F4-TEXT  F5-NEXT  F6-RETURN  F7-PRIOR PAGE
F8-NEXT PAGE  F9-LINK  F10-SAVE  F11-TOGGLE  F12-VIEW VEN  ENTER-INQUIRE  CL-EXIT
```

Entering data (Cost per Copy, Flat Rate, Purchase or Lease)

```
PCHL2348 V4.1 MD PRD          ADVANCED PURCHASING/INVENTORY   11/09/2006   9:49 AM
LINK TO:                      BLANKET PURCHASE ORDER DETAIL

CONTRACT ID :  001B7900420         CONTRACT AMOUNT:                ALL:       I/D:
 VENDOR ID  :  1160468020     XEROX
 MULT VENDORS:        N       (Y/N)          F/P:                AMOUNT:              PCT:
S      COMMODITY ID          LINE ORIG-LINE MAX QUANTITY        UNIT COST    MAX COST
COMMODITY DESCRIPTION
 01621                 0001           0001           1.00          121.0000     121.00
PHOTOCOPIER CONTRACT
 01621                 0002           0002           1.00           26.0000      26.00
PHOTOCOPIER CONTRACT
 01621                 0003           0003
PHOTOCOPIER CONTRACT
01621                  0004           0004
PHOTOCOPIER CONTRACT

F1-HELP  F2-SELECT  F3-DELETE  F4-TEXT  F5-NEXT  F6-RETURN  F7-PRIOR PAGE
F8-NEXT PAGE  F9-LINK  F10-SAVE  F11-TOGGLE  F12-VIEW VEN  ENTER-INQUIRE  CL-EXIT
```

Adding it up

```
PCHL2348 V4.1 MD PRD          ADVANCED PURCHASING/INVENTORY    11/09/2006        9:54 AM
LINK TO:                      BLANKET PURCHASE ORDER DETAIL

CONTRACT ID :  001B7900420           CONTRACT AMOUNT:                   ALL:
I/D:
VENDOR ID   :    1160468020   XEROX
MULT VENDORS:          N      (Y/N)           F/P:              AMOUNT:                 PCT:
S      COMMODITY ID           LINE ORIG-LINE  MAX QUANTITY      UNIT COST      MAX COST
       COMMODITY DESCRIPTION
       01621        0001     0001     1.00                      121.0000        121.00
       PHOTOCOPIER CONTRACT
       01621        0002     0002     1.00                       26.0000         26.00
       PHOTOCOPIER CONTRACT
       01621        0004     0004     1.00                      113.0800        113.08
       PHOTOCOPIER CONTRACT



       F1-HELP   F2-SELECT  F3-DELETE   F4-TEXT  F5-NEXT        F6-RETURN  F7-PRIOR PAGE
       F8-NEXT PAGE    F9-LINK        F10-SAVE F11-TOGGLE  F12-VIEW VEN  ENTER-INQUIRE  CL-EXIT
```

Total cost = $260.08 per month

Includes: **$121.00 per month for base unit**
$ 26.00 per month for optional accessories
$113.08 per month for service and/or maintenance
$260.08 per month

Populating the line item block information field: line 001

```
PCHL2126 V4.1 MD PRD          ADVANCED PURCHASING/INVENTORY    11/08/2006        1:39 PM
LINK TO:                      SPECIFICATIONS/TERMS SELECTION

Document  ID :  001B7900420   BPO LINE NO:        0001
S        ID          SHORT TITLE          S        ID              SHORT TITLE
                NONE          NONE




BLOCK FUNCTION:          (TERM ID TO COPY, ISRT, DLET, DUP)   BLOCK       001      OF 001
   LOW VOLUME COPIER UNDER 22 COPIES PER MINUTE (CPM) BASE UNIT.
.
  IR-5530 BASE UNIT $121.00 PER MONTH
  $121.00 x 12 months = $1,452.00 or $121.00 x 60 months = $7,260.00




F1-HELP        F2-SELECT      F3-DELETE      F4-BLOCK FUNC         F7-PRIOR BLK
F8-NEXT BLK    F9-LINK        F10-SAVE                    ENTER-INQUIRE          CL-EXIT
```

Populating the line item block information field: line 002

```
PCHL2126 V4.1 MD PRD          ADVANCED PURCHASING/INVENTORY    11/08/2006       1:46 PM
LINK TO:                      SPECIFICATIONS/TERMS SELECTION

Document  ID :  001B7900420   BPO LINE NO:       0002
S       ID            SHORT TITLE           S       ID              SHORT TITLE
                NONE          NONE

BLOCK FUNCTION:        (TERM ID TO COPY, ISRT, DLET, DUP)   BLOCK      001     OF 001
        LOW VOLUME COPIER OPTIONAL ACCESSORIES for the IR5530 Base Unit
        .
        50 Sheet Stapling Finisher #9937 Rental @ $26.00 per month.
        $26.00 x 12 months = $312.00 or $26.00 x 60 months = $1,560.00

F1-HELP        F2-SELECT      F3-DELETE      F4-BLOCK FUNC        F7-PRIOR BLK
F8-NEXT BLK    F9-LINK        F10-SAVE                      ENTER-INQUIRE          CL-EXIT
```

Populating the line item block information field: line 003

```
PCHL2126 V4.1 MD PRD          ADVANCED PURCHASING/INVENTORY    11/08/2006       1:50 PM
LINK TO:                      SPECIFICATIONS/TERMS SELECTION

Document  ID :  001B7900420   BPO LINE NO:       0003
S       ID            SHORT TITLE           S       ID              SHORT TITLE
                NONE          NONE

BLOCK FUNCTION:        (TERM ID TO COPY, ISRT, DLET, DUP)   BLOCK      001     OF      001
        OPERATING SUPPLIES LOW VOLUME COPIER
        .
        To be completed for outright purchase and leases.  This line item is not required for 60 month cost per copy or
flat rate rental plans.

F1-HELP        F2-SELECT      F3-DELETE      F4-BLOCK FUNC    F7-PRIOR BLK
F8-NEXT BLK    F9-LINK        F10-SAVE                      ENTER-INQUIRE          CL-EXIT
```

Populating the line item block information field: line 004

```
PCHL2126 V4.1 MD PRD     ADVANCED PURCHASING/INVENTORY          11/08/2006          1:57 PM
 LINK TO:                            SPECIFICATIONS/TERMS SELECTION

Document  ID :   001B7900420     BPO LINE NO:              0004
 S         ID                  SHORT TITLE            S          ID                   SHORT TITLE
                               NONE              NONE


          BLOCK FUNCTION:             (TERM ID TO COPY, ISRT, DLET, DUP)    BLOCK         001        OF 001
          LOW VOLUME COPIER MAINTENANCE CONTRACT for the IR5530 Base Unit
                    .
          Service/Maintenance contract. Includes 15,000 copies per month copy plan @ $106.00 per month.
                    Overage charged @ 0.00708 per copy.
                    Estimated @ 1,000 @ 0.00708 = $7.08
                    Total line cost $113.08

            $113.08 x 12 months = $1,356.96 or $113.08 x 60 months = $6,784.80


F1-HELP          F2-SELECT        F3-DELETE        F4-BLOCK FUNC          F7-PRIOR BLK
F8-NEXT BLK      F9-LINK          F10-SAVE                         ENTER-INQUIRE           CL-EXIT
```

$106.00 x 12 = $1,272.00 or 106.00 x 60 = $6,360.00 (Cost per Copy or Flat Rate)
Add something for overage estimate 1,000 copies times 0.00708 equals $7.08
Total Cost: $113.08 x 12 = $1,356.96 or $113.08 x 60 = $6,784.80

Total Contract Amount: **$260.08**
$3,120.96 for 12 months
$15,604.80 for 60 months

```
PCHL2342 V4.1 MD PRD              ADVANCED PURCHASING/INVENTORY    11/09/2006         10:05 AM
LINK TO:                          BLANKET PURCHASE ORDER
BPO/CONTRACT ID :      001B7900420        DEPT  :          00125            NOTE PAD    :   N
PURCHASING TYPE :      SW               BID ID :          AWARD       :
ACTION INDICATOR:      N                          INTERFACE TYPE  :      BP        DGS BPO (Y/N):  N
STATUS         :    NOPT                          DBM BPO (Y/N):  N
SA CONTRACT NO :                        POST DATE       :
CONTRACT AMOUNT :         260.08        EFFECTIVE DATE  :       11/09/2006
EST CONTRACT AMT:       950,000.00      EXPIRATION DATE :       11/08/2011
REMAINING VALUE :          260.08       FISCAL EFF DATE :       11/09/2006
BUYER ID:          ZDXL     NAME:   DWYANE LEE                PHONE:           4107674425       EXT:
VENDOR:          1160468020       XEROX
ADDRESS                        :    409 WASHINGTON AVE
                               TOWSON, MD 21204
MULTI-VENDOR  :          N
MULTI-YEAR    :  Y                COMMODITY CTRL (F/P):          F          LEVEL (1/2/3):            MINORITY SUB:  N
RENEWAL       :                   OPTIONS   :
ORIGINAL BPO  :          001B7900157      OPTION MAX:                      ORIGINAL AMT:    950,000.00

REFERENCE     :          Y              ALLOW REF (Y/N):          N     LIMIT REFEXP DT (Y/N)  N
F1-HELP          F2-COPY BPO    F3-DEL  F4-OTHER KEYS            F5-NEXT      F6-VIEW DOC          F7-VEN SEL
F8-ELEM          F9-LINK  F10-SAVE       F11-VEN SELECT           F12-SEL SUB     ENTER-INQUIRE             CL-EXIT
```

Appendix A

Analog
If budget is the driving factor for you or you have modest copying needs, an analog copier might be the best option for you. Although few manufacturers are introducing new analog copy machines, they are still easy to find and are (generally) the least expensive type of copier. Pricing for a basic analog copier starts at around $200 and can go up to several thousand, depending on features.

Digital
If you're looking to perform fax or printing functions through your copier, you will need a digital copy machine. Apart from these functions, digital copiers do have some advantages over analog, including: less noise, fewer moving parts, better copy quality in some instances (i.e., photos), and better reduction/enlargement capabilities. Black and white digital copiers start at around $700 on the low end of the range, and the highest-end models can cost more than $100,000.

Color
Color copiers use digital laser technology and can duplicate in black and white as well. Most color copiers can be configured to act as a color printer, and you can also get an ink-jet color printer with scanning capabilities that will essentially function as a color copier. Color ink-jet printers with scanning start at around $800, while true digital color copiers start at around a few thousand dollars and can cost as much as $100,000 and more

Features and Functions to Look For in a Copy Machine
Once you have identified the general type of copy machine that will fit your needs, there are other features and functions to consider. The desirability and pricing of these features will help you narrow down your choices for a specific copy machine.

Copy volume
The number of copies you make in a month.

Copy speed
Copies per minute (CPM) refers specifically to the number of letter-sized copies the machine can produce in one minute when running at full speed. This does not include making two-sided copies, copying on to larger sheets, automatic feeding or sorting, or any other advanced function.

Feeders
A document feeder allows you to copy multi-page documents without having to lift and lower the cover for every individual sheet.

Sorters and staplers
A sorter will help organize multiple sets of multi-page documents. A stapler gives you the option of stapling your multi-page documents together.

Duplexers
A duplexer allows you to copy on to both sides of a single sheet of paper.

Paper Supply
Paper supply refers to the sets of trays and holders that hold paper inside the copier. Standard trays typically hold 50 to 100 sheets, and the largest-capacity trays can hold up to 3,000 sheets.

Paper Sources
Paper sources refers to the number of different paper trays available; such as trays that hold standard sheets (which can be loaded with letterhead, colored paper, etc.), legal-sized sheets, etc.

How to find the best copier deal for you

Copiers at the low end of the price spectrum are widely available, however, service contracts aren't included in the package. To mitigate breakdowns, the leading copier manufacturers of low-end copiers offer warranties that will cover basic repairs or replacement.

Rental and or Lease

For mid- or high-range copiers that are not purchased directly from a copy machine dealer. Copiers that cost more than a couple thousand dollars can be bought outright, but they are most often rented or leased for budgeting reasons. The typical rental/lease period is three to five years.

Some leases are based on a per-copy basis, which can be ideal depending on your usage and volume needs. Some rental/leases will commit you to monthly copying minimums or encourage trade-ups if you exceed the minimum per-copy allotment. Make sure that the rental/lease terms are compatible with your copying needs. It is quite common for a organization to grow or change their copying needs over the course of a three or five year period, so try to find a rental/lease that gives you a fair amount of flexibility to adapt to your changing needs.

Service Agreement/Contract

When you purchase or lease a copier from a dealer, you will need to arrange for servicing of the copy machine, both on a routine and emergency basis. Service agreements are typically based on the number of copies that are made in a given time period. Your copier usage is likely to fluctuate month to month, so be careful of the term that you agree to as well as the term minimum. Monthly minimums might be costly if your usage varies considerably from month to month, and overestimating might be costly because you typically aren't reimbursed for the difference in committed usage and actual usage. You might consider a service agreement that charges you for only the copies you make, and/or has lower monthly payments and a higher per-copy fee.

Most service agreements cover the costs of parts and labor for repairing and maintaining your copier. However, the definition of parts can vary among service agreements. Replacement parts that break during use, as well as parts that wear out over time (fuser rollers, cleaning blades, etc.) are almost always covered. The costs of consumables such as paper and toner are usually excluded. However, there are items, such as the copier drum (or photoconductor), that can alternately be considered either replacement parts or consumables. Replacing the copier drum can cost several hundred dollars, so make sure that the service agreement explicitly states what is covered and what is not.

For emergency repairs above and beyond routine maintenance, make sure to find out whether these costs are covered in full or priced on a per-incident basis. Also, make sure to get a commitment in terms of response time (usually four hours or less) and service hours (nights, weekends, etc.).

Dealers

When it comes time to choose a dealer, "service" is the most important word you need to remember, especially if the dealer you buy, rent or lease from will also be handling the service agreement. Having a high-quality copier without high-quality servicing of that copier may not be worth the money you are paying for it. When searching for a copier and dealer, make sure to ask the following questions:

- How long have they been in business?
- What is the experience level of their service technicians on YOUR copier model?
- How many service technicians are in the area?
- What references can they provide?
- What kind of user training is available?

Extra TIPS!

Buyers often don't realize that they don't have to buy a service agreement and/or consumables from the same dealer who sold or leased them the copier. Sometimes, you can find a better deal by getting your service agreement somewhere else.

Once you're at a point where you're deciding between two or three different copier models, ask the dealer to bring the machines to your office for a demo of their network-based capabilities. If this isn't possible, at least make sure you visit the dealer to see how the machines work.

If budget is of utmost concern for you, make sure to explore the option of buying a refurbished copy machine; they can usually be purchased or even leased for about two-thirds of the price of a new copier.

Color copiers usually require about four times as many service calls as black and white copiers. They also usually require servicing after every 5,000 color copies, compared to after every 100,000 copies for black and white machines.

In conclusion, we hope you have found the information useful. We recognize that this guide was in no way exhaustive, and that there is more to copiers and digital output devices than what is included here. We suggest that you use the information in this guide as a starting point in your search for the right copy machine for you.

Appendix B Specifications for ALL Type Copiers

Specifications for all type digital copiers multifunctional devices, facsimile, wide-format and digital duplicator base unit.

Low-Volume Copiers & Multifunctional Devices

Desktop or console Digital Multifunctional with Standard 300 Sheet Paper Drawer Plus 50 Sheet Multi-Purpose Tray, 64MB RAM for Scan Once Print Many and Electronic Sort, 50 Sheet Document Processor, Duplex, Standard Printing and Network Interface. Optional Network Scan and Fax, Paper Handling and Finishing.

- Resolution: 600 x 600 DPI/ 256 Levels; Fast 1200 DPI (1800 x 600); 2400 x 600 DPI w/KIR Print Resolution
- Copier Memory: Standard 64MB RAM upgradeable to 256MB via 100 Pin DIMMS (1 Slot)
- Magnification: Full Size, Auto Magnification, Plus 50-200% Zoom in 1% Increments
- Electrical Requirements: 120V, 60Hz, 9.0A
- Max Monthly Volume: 20,000 Pages Per Month

Output Speeds:
- Warm-Up Time: Within 20 Seconds
- First Copy Out: 5.9 Seconds
- First Print Out: 5.5 Seconds
- Pages Per Minute: 16 Letter, 8 Legal, 8 Ledger

Paper Supply:
- Standard Paper Sources: 300 Sheet Drawer (2050 x2), 50 Sheet MPT
- Drawer Paper Size: 5.5" x 8.5" - 11” x 17”
- MPT Paper Size: 5.5” x 8.5” - 11” x 17”
- Std / Max Paper Capacity: 350/ 1250
- Paper Weight: 16-28 lb bond via Paper Drawers, 13 lb Bond -90 lb Index via MPT
- Input Materials: Bond Paper, Recycled Paper, Transparencies, Envelopes

Copy Functions:
- Imaging Modes: Auto, Text, Photo, Text / Photo, Manual, ECO
- Continuous Copy: Up to 999,Auto Reset to 1
- Additional Features: Auto Magnification and Paper Select, Scan Once Print Many,
- Electronic Sort, Rotate Sort (with optional Paper Drawer), 2 in 1, 4 in 1,
- Border Erase, Margin Shift, ECO Mode, 100 Management Codes

Document Processor:
- Type: Reversing Automatic Document Feeder
- Acceptable Originals: 5.5” x 8.5" – 11” x 17”
- Capacity: 50 Sheet RADF
- Speed: 16 Originals per Minute
- Paper Weight: 13 lb Bond – 90 lb Index

Duplex:
- Type: Stackless
- Paper Size: 5.5” x 8.5” - 11” x 17”
- Paper Weight: 16 - 20 lb Bond
- Duplex Modes: 1:2*; 2:2; 2:1; Book: 2/1 ***Note (1:2 shall be the default duplex copier mode)***

Paper Drawer:

- Paper Capacity: 300 Sheets
- Paper Weight: 16 - 28 lb Bond
- Paper Size: 5.5” x 8.5” - 11” x 17”

Internal Finisher:

- Stack Capacity: 500 Sheets
- Paper Size: 5.5” x 8.5” - 11” x 17”
- Paper Weight: 16 - 28 lb Bond
- Staple Capacity: 30 Sheets: 8.5” x 11”; 20 Sheets 8.5” x 14”, 11” x 17”

Connectivity - Standard Print:

- Controller: Embedded PowerPC750/ 300 MHz Controller
- Printer Memory: Standard 64MB, Upgradeable to 320MB via 100 Pin DIMMS, Optional MicroDrive (CF Type 2), Standard CF Card Slot (Type 1)
- Supported PDL/Emulations: PRESCRIBE, PCL6 (PCL XL,PCL 5e), KPDL3 (PS3), KCGL (HP-GL/2),
  Diablo 630, IBM ProPrinter X24, Epson LQ850, Line Printer
- Fonts: 80 Outline Fonts for PCL XL/5e, 136 Outline Fonts for KPDL3,
  17 Bitmap Fonts
- Windows™ OS Compatibility: Windows™ 95/98/Me/NT4.x/2000/XP/2003
- Novell™ OS Compatibility: Novell NetWare™ 3.x/4.x/5.x/6.x
- Mac OS Compatibility: OS 8.x/9.x/10.x
- UNIX OS Compatibility: Sun OS 4.1.x; Solaris 2.x; AIX, HP-UX (LPR)
- Connectivity / Interface: Standard 10/100BaseTX,Parallel IEEE1284, High Speed USB 2.0
- Expansion Slot: Optional IB-22 Enhanced Wireless NIC
- Supported Protocols: TCP/IP, IPX/SPX, AppleTalk, NetBEUI
- Driver: Driver for Windows™, PPD for Mac, PPD for Linux/UNIX, Certified UniDriver
- Utilities: NET Viewer, NET for Clients, PDF Direct Print, NET Printer; Disk Manager, Command Center, Utilities

Scan System

- Resolution: 200, 300, 400, 600 DPI
- Scan Speed: Up to 16 Sheets Per Minute
- File Formats: PDF, TIFF
- Connectivity: NS-30 10/100BaseTX
- Supported Protocols: TCP/IP
- Scanning Features: Scan to PC/File, Scan to Mac, Scan to E-Mail, TWAIN
- Driver: TWAIN Driver
- Utilities: Scanner File Utility, Scan to Mac Utility, Advanced Network Setup Utilities

Fax/Network Fax System:

- Compatibility: Super G3
- Transmission Speed: Approximately 2 Seconds per Page
- Modem Speed: 33.6 Kbps w/ Auto Fallback
- Data Compression: JBIG, MMR, MR, MH
- Fax Memory: Std 8MB/ Max 40MB
- Driver: KM Network Fax Driver
- Utilities: Address Book for NW Fax, Address Editor for Fax
- Additional Features: Duplex TX/RX, Confidential TX/RX, Polling, Broadcasting, 2 in 1 RX

Additional Features: Job Separator, Platen Cover, Copy Stand (for desktop models), 32MB Fax Memory

Medium-Volume Copiers & Multifunctional Devices

Desktop or console Digital Multifunctional with Standard 300 Sheet Paper Drawer Plus 50 Sheet Multi-Purpose Tray, 64MB RAM for Scan Once Print Many and Electronic Sort, 50 Sheet Document Processor, Duplex, Standard Printing and Network Interface. Optional Network Scan and Fax, Paper Handling and Finishing.

- Resolution: 600 x 600 DPI/ 256 Levels; Fast 1200 Print Resolution
- Copier Memory: Standard 64MB RAM upgradeable to 256MB via 100 Pin DIMMS (1 Slot)
- Magnification: Full Size, Auto Magnification, Plus 25-200% Zoom in 1% Increments
- Electrical Requirements: 120V, 60Hz, 9.0A
- Max Monthly Volume: 40,000 Pages Per Month

Output Speeds:
- Warm-Up Time: Within 20 Seconds
- First Copy Out: 4.9 Seconds
- First Print Out: 4.9 Seconds
- Pages Per Minute: 25 Letter, 13 Legal, 13 Ledger

Paper Supply:
- Standard Paper Sources: 300 x 2 Sheet Drawers, 50 Sheet MPT
- Drawer Paper Size: 5.5" x 8.5" - 11” x 17”
- MPT Paper Size: 5.5” x 8.5” - 11” x 17”
- Std / Max Paper Capacity: 650/ 1250
- Paper Weight: 16-28 lb bond via Paper Drawers, 13 lb Bond -90 lb Index via MPT
- Input Materials: Bond Paper, Recycled Paper, Transparencies, Envelopes

Copy Functions:
- Imaging Modes: Auto, Text, Photo, Text / Photo, Manual, ECO
- Continuous Copy: Up to 999,Auto Reset to 1
- Additional Features: Auto Magnification and Paper Select, Scan Once Print Many, Electronic Sort, Rotate Sort, 2 in 1, 4 in 1, Border Erase, Margin Shift, ECO Mode, 100 Management Codes

Document Processor:
- Type: Reversing Automatic Document Feeder
- Acceptable Originals: 5.5” x 8.5" – 11” x 17”
- Capacity: 50 Sheet RADF
- Speed: 25 Originals per Minute
- Paper Weight: 13 lb Bond – 90 lb Index

Duplex:
- Type: Stackless
- Paper Size: 5.5” x 8.5” - 11” x 17”
- Paper Weight: 16 - 20 lb Bond
- Duplex Modes: 1:2*; 2:2; 2:1; Book: 2/1 ***Note (1:2 shall be the default duplex copier mode)***

Paper Drawer:
- Paper Capacity: 300 Sheets
- Paper Weight: 16 - 28 lb Bond
- Paper Size: 5.5” x 8.5” - 11” x 17”

Internal Finisher:

- Stack Capacity: 500 Sheets
- Paper Size: 5.5” x 8.5” - 11” x 17”
- Paper Weight: 16 - 28 lb Bond
- Staple Capacity: 30 Sheets: 8.5” x 11”; 20 Sheets 8.5” x 14”, 11” x 17”

Connectivity - Standard Print:

- Controller: Embedded PowerPC750/ 300 MHz Controller
- Printer Memory: Standard 64MB, Upgradeable to 320MB via 100 Pin DIMMS, Optional MicroDrive, Standard CF Card Slot (Type 1)
- Supported PDL/Emulations: PCL6 (PCL XL,PCL 5e), KPDL3 (PS3), KCGL (HP-GL/2), Diablo 630, IBM ProPrinter X24, Epson LQ850, Line Printer
- Fonts: 80 Outline Fonts for PCL XL/5e, 136 Outline Fonts for KPDL3, 17 Bitmap Fonts
- Windows™ OS Compatibility: Windows™ 95/98/Me/NT4.x/2000/XP/2003
- Novell™ OS Compatibility: Novell NetWare™ 3.x/4.x/5.x/6.x
- Mac OS Compatibility: OS 8.x/9.x/10.x
- UNIX OS Compatibility: Sun OS 4.1.x; Solaris 2.x; AIX, HP-UX (LPR)
- Connectivity / Interface: Standard 10/100BaseTX,Parallel IEEE1284, High Speed USB 2.0
- Expansion Slots (1) Optional IB-22 Enhanced Wireless NIC
- Supported Protocols: TCP/IP, IPX/SPX, AppleTalk, NetBEUI
- Driver: Driver for Windows™, PPD for Mac, PPD for Linux/UNIX, Certified UniDriver
- Utilities: NET Viewer, NET for Client, PDF Direct Print, NET Printer, Disk Manager, Command Center, Utilities

Optional Scan System:

- Resolution: 200, 300, 400, 600 DPI
- Scan Speed: Up to 25 Sheets Per Minute
- File Formats: PDF, TIFF
- Connectivity: NS-30 10/100BaseTX
- Supported Protocols: TCP/IP
- Scanning Features: Scan to PC/File, Scan to Mac, Scan to E-Mail, TWAIN
- Driver: TWAIN Driver
- Utilities: Scanner File Utility, Scan to Mac Utility, Advanced Network Setup Utilities

Optional Fax/Network Fax:

- Compatibility: Super G3
- Transmission Speed: Approximately 2 Seconds per Page
- Modem Speed: 33.6 Kbps w/ Auto Fallback
- Data Compression: JBIG, MMR, MR, MH
- Fax Memory: Std 8MB/ Max 40MB
- Driver: Network Fax Driver
- Utilities: Address Book for NW Fax, Address Editor for Fax
- Additional Features: Duplex TX/RX, Confidential TX/RX, Polling, Broadcasting, 2 in 1 RX

Additional Features:

Job Separator, Platen Cover, Copy Stand (for desktop models), 32MB Fax Memory, 16, 32, 64, 128MB DIMM for Copier, 32, 64, 128, 256MB DIMM for Printer

Console Digital Multifunctional with Standard Sheet Paper Drawer Plus 50 Sheet Multi-Purpose Tray, 64MB RAM for Scan Once Print Many and Electronic Sort, 50 Sheet Document Processor, Duplex,

Standard Printing and Network Interface. Optional Network Scan and Fax, Paper Handling and Finishing.

- Copy/Print Speed: 62 pages per minute
- Print Language: PCL5e/PCL6 standard; optional PS3 kit
- Maximum Paper Capacity: 6,600 sheets (with options)
- Job Build capability: Allows pages to be combined into one document (with optional Hard Disk Drive)
- 100-Sheet Duplex Single-Pass Document Feeder: Allows copying/scanning/faxing of a two-sided original in a single-pass
- Advanced Finishing Capabilities: Saddle-stitch finisher with hole punching; two-tray sorting/stapling finisher option as well as a post-sheet inserter finisher.
- Tandem Copy/Print capability: Connect two systems over the network and double your productivity!
- Alpha-numeric touch-screen LCD display panel: User-friendly control panel allows you to enter e-mail addresses for efficient distribution of documents
- Standard Document Filing: Enables users to easily archive documents to the hard drive of the system
- Standard 40GB Hard Drive: Stores approximately 60,000 pages for easy access to frequently used documents
- Optional Fax and Network Scanning Kits: Transforms the system into a powerful multi-functional device enabling scan-to-email scan-to-desktop and scan-to-file capabilities. User Authentication allows access to only valid users on the network.

<u>Specifications:</u>

- Copy Speed 62 cpm (8.5" x 11")
- Automatic Duplex Standard - unlimited
- Original Size Max. 11" x 17"
- Paper Feed One 2000 sheet letter-size tandem paper drawer; two 500-sheet universal paper trays standard with optional 3,500 sheet Large Capacity Paper Deck available increasing paper capacity to 6,600 sheets total
- Recommended Monthly Volume 300,000 Max Monthly Volume
- Print Speed 62 ppm (8.5" x 11")
- Page Description Language PCL5e, PCL6, PostScript Level 3 (option)
- Modem / Transmission Speed 33.6 Kbps
- Type Console
- Copy System Dry, electrostatic transfer system
- Originals Sheets, bound document, photographs
- Original Size Max. 11" x 17" / Min. 5.5" x 8.5"
- Copy Size Max. 11" x 17" / Min. 5.5" x 8.5"
- Continuous Copy Max. 999 copies
- Copy Ratio 25% to 400%
- Fixed presets 8 preset ratios
- Resolution 600 dpi
- First-Copy Time 3.9 seconds or less
- Warm-Up Time 120 seconds or less
- Original Feed System Duplex Single-Pass Feeder
- Hard Drive 40GB
- Fusing System Heat rollers

- Developer System Magnetic Brush Development
- Exposure System
- Light Source Halogen lamp
- Gradation 256 levels
- Required Power Supply 120 volts, 60Hz, 16A
- Optional Equipment Optional saddle-stitch finisher, optional hole punch unit ; optional post-sheet inserter finisher; 2-tray sorting/stapling finisher; Fax Expansion Kit; 3,500 Large Capacity Paper Deck; Network Scanning Kit; PostScript 3 (emulation); Bar Code Font Kit

Printer Specifications:

- Technology Embedded Sharp controller w/network interface (standard)
- Processor 64 bit RISC, 525 Mhz
- Print Size Max. 11" x 17"
- Resolution / Print Quality 600 dpi, 1,200 dpi equivalent with smoothing technology
- Computer Interface IEEE 1284 parallel port, USB 2.0 port
- Network Operating Systems Windows 95/98/Me, Windows NT 4.0 (Service Pack5 or later), Windows 2000, WindowsXP, Macintosh System 8.6 - 9.x, 10.1.5, 10.2-10.2.8 (except 10.2.2)
  Note: Postscript 3 Kit required for Macintosh support
- Protocols IPX/SPX, TCP/IP, Net BEUI, EtherTalk
  Note: Postscript 3 Kit required for EtherTalk
- Auto Switching Yes
- Print Driver Support Windows 95/98/Me, Windows NT 4.0 (Service Pack5 or later), Windows 2000, WindowsXP, Macintosh System 8.6 - 9.x, 10.1.5, 10.2-10.2.8 (except 10.2.2)
  Note: Postscript 3 Kit required for Macintosh support
- Resident Fonts 80 fonts for HP PCL, 136 fonts for PS (with optional AR-PK5)
- Memory 128MB (standard); expandable to 256MB with options
- Print Paper Feed Standard Duplex Single-Pass Feeder

Fax Specifications:

- Type PSTN, PBX
- Document Feeder Standard Duplex Single-Pass Feeder
- Original Size Max. 11" x 17" / Min. 5.5" x 8.5"
- Print Size Max 11.5" max (11"x17" printing)
- Transmission Speed 2 seconds (Super G3); 6 seconds (G3)1
- Broadcast Up to 500 destinations
- Rapid and Group Dial Combined total of 500 one-touch and group keys
- Speed Dial Combined total of 500 one-touch and group keys
- Grayscale 256 levels
- Fax Memory 2MB standard expandable to 10MB

Scanning Specifications:

- Resolution 200, 300, 400,600 dpi Email/FTP resolution
- Compatibility TWAIN compliant (push out method)
- User licenses included with Network Scanner Expansion Kit

Color Copiers and Black & White/Color Multifunctional Devices

Console Digital Multifunctional with Standard Sheet Paper Drawer Plus 50 Sheet Multi-Purpose Tray, 64MB RAM for Scan Once Print Many and Electronic Sort, 50 Sheet Document Processor, Duplex, Standard Printing and Network Interface. Optional Network Scan and Fax, Paper Handling and Finishing.

- Resolution: 600 x 600 DPI/ 256 Levels; Fast 1200 Print Resolution

- Copier Memory: Standard 64MB RAM upgradeable to 256MB via 100 Pin DIMMS (1 Slot)
- Magnification: Full Size, Auto Magnification, Plus 25-200% Zoom in 1% Increments
- Electrical Requirements: 120V, 60Hz, 9.0A
- Max Monthly Volume: 40,000 Pages Per Month

Output Speeds:
- Warm-Up Time: Within 20 Seconds
- First Copy Out: 4.9 Seconds
- First Print Out: 4.9 Seconds
- Pages Per Minute: 25 Letter, 13 Legal, 13 Ledger

Paper Supply:
- Standard Paper Sources: 300 x 2 Sheet Drawers, 50 Sheet MPT
- Drawer Paper Size: 5.5" x 8.5" - 11" x 17"
- MPT Paper Size: 5.5" x 8.5" - 11" x 17"
- Std / Max Paper Capacity: 650/ 1250
- Paper Weight: 16-28 lb bond via Paper Drawers, 13 lb Bond -90 lb Index via MPT
- Input Materials: Bond Paper, Recycled Paper, Transparencies, Envelopes

Copy Functions:
- Imaging Modes: Auto, Text, Photo, Text / Photo, Manual, ECO
- Continuous Copy: Up to 999,Auto Reset to 1
- Additional Features: Auto Magnification and Paper Select, Scan Once Print Many, Electronic Sort, Rotate Sort, 2 in 1, 4 in 1, Border Erase, Margin Shift, ECO Mode, 100 Management Codes

Document Processor:
- Type: Reversing Automatic Document Feeder
- Acceptable Originals: 5.5" x 8.5" – 11" x 17"
- Capacity: 50 Sheet RADF
- Speed: 25 Originals per Minute
- Paper Weight: 13 lb Bond – 90 lb Index

Duplex:
- Type: Stackless
- Paper Size: 5.5" x 8.5" - 11" x 17"
- Paper Weight: 16 - 20 lb Bond
- Duplex Modes: 1:2*; 2:2; 2:1; Book: 2/1 ***Note (1:2 shall be the default duplex copier mode)***

Paper Drawer:
- Paper Capacity: 300 Sheets
- Paper Weight: 16 - 28 lb Bond
- Paper Size: 5.5" x 8.5" - 11" x 17"

Internal Finisher:
- Stack Capacity: 500 Sheets
- Paper Size: 5.5" x 8.5" - 11" x 17"
- Paper Weight: 16 - 28 lb Bond
- Staple Capacity: 30 Sheets: 8.5" x 11"; 20 Sheets 8.5" x 14", 11" x 17"

Connectivity - Standard Print:
- Controller: Embedded PowerPC750/ 300 MHz Controller
- Printer Memory: Standard 64MB, Upgradeable to 320MB via 100 Pin DIMMS, Optional

MicroDrive, Standard CF Card Slot (Type 1)
- Supported PDL/Emulations: PCL6 (PCL XL,PCL 5e), KPDL3 (PS3), KCGL (HP-GL/2), Diablo 630, IBM ProPrinter X24, Epson LQ850, Line Printer
- Fonts: 80 Outline Fonts for PCL XL/5e, 136 Outline Fonts for KPDL3, 17 Bitmap Fonts
- Windows™ OS Compatibility: Windows™ 95/98/Me/NT4.x/2000/XP/2003
- Novell™ OS Compatibility: Novell NetWare™ 3.x/4.x/5.x/6.x
- Mac OS Compatibility: OS 8.x/9.x/10.x
- UNIX OS Compatibility: Sun OS 4.1.x; Solaris 2.x; AIX, HP-UX (LPR)
- Connectivity / Interface: Standard 10/100BaseTX,Parallel IEEE1284, High Speed USB 2.0
- Expansion Slots (1) Optional IB-22 Enhanced Wireless NIC
- Supported Protocols: TCP/IP, IPX/SPX, AppleTalk, NetBEUI
- Driver: Driver for Windows™, PPD for Mac, PPD for Linux/UNIX, Certified UniDriver
- Utilities: NET Viewer, NET for Client, PDF Direct Print, NET Printer
- Disk Manager, Command Center, Utilities

Optional Scan System:
- Resolution: 200, 300, 400, 600 DPI
- Scan Speed: Up to 25 Sheets Per Minute
- File Formats: PDF, TIFF
- Connectivity: NS-30 10/100BaseTX
- Supported Protocols: TCP/IP
- Scanning Features: Scan to PC/File, Scan to Mac, Scan to E-Mail, TWAIN
- Driver: TWAIN Driver
- Utilities: Scanner File Utility, Scan to Mac Utility, Scanner Address Book, Address Book Editor, Command Center

Optional Fax/Network Fax:
- Compatibility: Super G3
- Transmission Speed: Approximately 2 Seconds per Page
- Modem Speed: 33.6 Kbps w/ Auto Fallback
- Data Compression: JBIG, MMR, MR, MH
- Fax Memory: Std 8MB/ Max 40MB
- Driver: Network Fax Driver
- Utilities: Address Book for NW Fax, Address Editor for Fax
- Additional Features: Duplex TX/RX, Confidential TX/RX, Polling, Broadcasting, 2 in 1 RX Job Separator, Platen Cover, 32MB Fax Memory, 16, 32, 64, 128MB DIMM for Copier, 32, 64, 128, 256MB DIMM for Printer

Facsimile Machines

16-Page Per Minute, with G3 fax technology, a large tilting LCD display, 8 MB standard flash memory, modular design to add multifunction components. With options that include web-based management, network scanning and network printing.

Features:

- 750 Sheet Paper Supply Standard: Two paper sources provide a combined paper supply of 750 sheets (500+250).
- Quick Scan: Scans one page in 1.3 seconds, which reduces your time in front of the fax machine on large document transmissions.
- Quick On-Line: When sending a fax, the number is dialed immediately even before the entire document is scanned.

- Autodialers: Store up to 59 one-touch rapid dial numbers and up to 100 coded speed dial numbers.
- Personal Auto-dial Phone Books: Unit must store personal auto-dial phone books with up to 75 auto-dial numbers in each. Good for multiple departments using the same machine.
- Duplex Scanning: Duplex scan key prompts users to flip over duplex originals when scanning them for fax transmission or copy. Eliminates the need to separate pages at the copier.
- Large Tilting Status Display: Ergonomic status display with large LCD screen tilts from 10-65 degrees for easy viewing.
- 16 Page Per Minute Print Speed: Heavy duty print engine can print received faxes up 16 pages per minute.
- Flexible network options: Include web-based management, network scanning, and network printing.

Specifications:

- Type: Desktop Facsimile
- Modem Speed: 33.6 Kbps
- Memory Size: 8 MB
- Document Size: 11" x 38" max / 5.8" x 5" min
- Automatic Document Feeder: 50 Sheets
- Automatic Paper feeding: Yes
- Speed Dials/Rapid Dials: 100 speed dials / 59 Rapid dials
- Copy: Yes

Wide-Format (Large Format)

Wide-Format (Large Format) digital standard Black & White/Color Multifunctional Unit.

Minimum Specifications:

- 4 D-Size per minute
- Scan Once – Print many (1-999)
- 200/300/400/600/1,200/2,400 Scanner DPI
- Grayscales:
  Printer – Bi-Level
  Scanner Bi-Level, Bi-Level Halftone, Multilevel Error Dispersion (256 Level Grayscale)
- 600 x 600 DPI Printer Resolution
- 2 Level Dithering
- Original Size: (Width) 8” to 36” x (Length) 11” to 237” (19’ ¾”)
- Standard 2 – 500’ Rolls (3rd Roll Optional)
- Media: Bond, film, Translucent Bond, Tracing and Custom
- 128 MB Standard Memory / Expandable to 256

  Optional CAD Master Controller

Digital Duplicator

Digital duplicator Standard model:

- Produces up to 120 copies per minute.
- Produce images as large as 11.4" x 16.4".
- Include a pre-inking system that inks the cylinder prior to the first print and at pre-determined intervals when the duplicator is not in use.
- Eight different print modes.
- A flat platen for book copying.
- Enlargements/reductions, and a 50-300 percent zoom function.

Digital duplicator Editing model:

- Produces up to 120 copies per minute.
- Produce images as large as 11.4" x 16.4".
- Include a pre-inking system that inks the cylinder prior to the first print and at pre-determined intervals when the duplicator is not in use.
- Eight different print modes.
- A flat platen for book copying.
- Enlargements/reductions, and a 50-300 percent zoom function.
- Built-in touch-screen editing system that allows operators to creatively manipulate documents through the trimming, masking, reversing and pattering functions.
- Accommodate a variety of standard and custom paper stocks, from 13 lb. to 110 lb.
- Sizes ranging from 3.5" x 5.5" to 11.88" to 17.28"

Appendix C Networking Specifications

The selected vendors shall deliver for rental and/or lease for five years, a network copier/printer digital imaging system that will meet agency day-to-day on demand printing and high specialized (*Mainframe printing applications (fmis, requisitions, purchase orders, blank purchase orders, change order), Computer Output to Laser Disk COLD, etc.) needs. The digital system must meet the following product requirements and services.

A. It must have a digital front end with associated software on an adjacent CPU and attached to a digital copier/printer. It must each function for general-purpose applications, as well as work with specialized software such as Adobe, Photoshop, Illustrator and PageMaker 6.5 (or current version) [Information Systems], Microsoft Office, Corel Draw, simultaneously. The vendors shall supply adequate software drivers (i.e., Windows, Macintosh) at no additional cost.

B. It must be able to handle multiple network protocols and operating systems such as DOS, Windows95, 98 and 2000 and XP, simultaneously without outside intervention.

C. The total cost of the rental/lease must include yearly maintenance, service and upgrades as necessary, to be divided over the rental/lease period.

D. Offer a vendor-to-customer guarantee program of no less than three-year rental/lease. The rental/lease agreement shall allow for upgrades consistent with technical advances as they become available to the industry. This guarantee shall provide State agencies the option to replace the printers if performance is unsatisfactory.

E. It must have the speed required, (b&w, color) output quality, paper size and tray/bin switching capability, connectivity, flexibility, support and service, affordability cost per page, ease of use and hardware durability outlined below. The network copier/printer digital imaging system must:

    1. Be a console freestanding networked document copier/printer capable of delivering collated sets of multiple page documents that include both black & white and full color pages.

    2. Have a processor to enable receiving, rasterization and printing simultaneously. This process must be upgradeable over the five-year rental/lease period.

    3. Have a job management and queue control directly at the digital front-end.

    4. Have a minimum of 40 GB image disk for storage of software, fonts, forms (fmis, requisitions, purchase orders, blank purchase orders, change order) and job spooling for printing multiple copies of a document at rated speed, without having to send over the network repeatedly.

    5. Have a minimum of 128 MB RAM

    6. Use black toners to render full black & white, gray tone pages. Image must not bleed, crack or peel (was transfer not acceptable).

i. If color at a minimum use cyan, magenta, yellow and black toners to render full color pages. Color must not bleed, crack or peel (wax transfer is not acceptable).

7. Be compatible with postscript (level 2), HP-GL2 and HP PCL5 with automatic switching between these different emulation modes.

8. Provide operational upgrades required for functionality purposes only at no additional cost.

9. Provide print quality no less than 400 x 400 dpi with the capability of printing 256,000 gradations of color and true black. (Electrostatic banding is not acceptable).

10. Be able to print single-sided and or double sided images onto plain recycled bond paper, transparencies, cover stock, labels, and on paper stock up to 11 x 17 inches. Ability to print on stock weights ranging from 20 – 28 pound recycled bond up to 90-pound index stock.

11. Have an output equal to or exceeding 6 pages per minute for full color and 20 pages per minute for black and white.

12. Handle print volume capable of printing 20,000 to 30,000 pages per month in both black & white and color (i.e., 15,000 in color and10, 000 in black & white.

13. Have a cost per page for black & white not to exceed 1 cent. Cost per page for color output not to exceed 10 cent (including all toner, consumable excluding paper).

14. Have an automatic jam recovery without rebooting.

15. Have at least three (3) in-line adjustable automatic switching paper trays.

16. Have automatic or programmed input/output tray switching.

17. Have a high capacity output stacker and the capability to offset stacking sets of a collated document. Sorters are not acceptable.

18. Be able to print from Ethernet running Novell Netware 4.11, DOS, Windows 3.x, XP and System 7.x for the Macintosh. It must be capable of supporting the following Ethernet protocols 802.2, 802.3, Ethernet II and TCP/IP.

19. Be able to be connected to and accept print files from multiple data sources (fmis, requisitions, purchase orders, blank purchase orders, change order) simultaneously.

20. Have a network interface (NIC) (10/100 BaseTx) and capable of accepting file formats (exceeding 40MB) in such a way as not to degrade overall network and system-wide printer performance.

21. Provide management and queue control of all files, including large files (exceeding 40MB), directly at the printer, to avoid files being sent over the network repetitively, as noted in item 8 above.

22. Have the “intelligence” to maintain job integrity through the recognition and management of files, which may be incorrectly sent to the printer through the use of error pages or feedback messages. Device specific errors on a front panel display. The unit should give feedback and continue with the next, not lockup user’s PC’s.

23. Have customized calibration capabilities to address color adjustments needed to print on alternative forms of media (paper, transparencies and card stock).

24. Be a new piece of equipment and current model.

F. The products must be delivered, installed and operating within thirty-days from the date of award.

G. The State requires a thirty-day trial performance period, beginning on the date that the network copier/printer digital imaging system is fully functional, during which the State agency shall have an unrestricted right to cancel the rental/lease and return the product to the vendor for reasons of unsatisfactory performance. State agency shall not pay for the thirty-day trial performance period and also maintains the right to cancel and return the product to the vendor at no cost to the State.

H. The selected vendors must provide new equipment and a full warranty and maintenance, to include:

1. Available remedial maintenance and scheduled maintenance at the site of the installation, Monday through Friday, excluding the following State holidays: New Year’s Day, Memorial Day, Labor Day, Thanksgiving Day, and Christmas Day. Maintenance shall be available between the hours of 8:00 a.m. to 5:00 p.m.

2. Remedial Maintenance Response Time – When the rental/leased hardware becomes inoperative or fails to function properly, the vendors shall make every reasonable effort to return the equipment to proper operating conditions, including labor and all parts necessary for repair of inoperative or improperly functioning equipment, within 5 working days after the State agency has requested remedial maintenance. At the State’s request or at the option of the vendor, scheduled maintenance may be performed concurrently with remedial maintenance.

3. Scheduled Maintenance – The vendors shall schedule monthly maintenance to ensure that all rental/leased hardware continues to function properly. Scheduled maintenance shall include such activities as checking, calibrating, and verifying proper operation.

4. State agency shall provide the vendor’s personnel with access to the equipment for maintenance. State agency shall cooperate with the vendor’s personnel, so that maintenance can be performed efficiently and without interruption.

5. Same date service is required. However, if the equipment cannot be repaired on site, within 24 hours of the initial on-site by the technician, then the vendor for use must provide comparable replacement equipment during the repair period.

*See mainframe application templates (PCL codes)

Appendix D Glossary of common terms used in the photocopier industry

A

ADF — Automatic Document Feeder. The abbreviation ADF on its own refers to the simplest type of feeder that is able to process only single-sided originals (in contrast to RADFs which can also handle double-sided ones).

ADFs on analog copiers require sorter bins in order to produce multiple sets of multi-page documents - the machine makes all the copies of each page in a batch, depositing one copy in each sorter bin.
ADFs on digital copiers do not require sorter bins if the unit operates with scan-once/print-many technology - the originals are instead scanned to memory, and complete sets are output sequentially on top of one another in a catch tray. Check out the capacity of the ADF (typically 30 - 50 sheets) and the speed at which it operates (typically the same as the engine speed of the copier it works with but sometimes a bit slower.

Analog — Traditional copier technology, employing the "light lens" method to reproduce originals (as opposed to scanning them electronically as on digital copiers).

B

Bypass (Tray) — Allows you to feed non-standard paper without having to put it in one of the main paper trays. Useful when you want to feed paper that's especially difficult to copy onto - for example, very light or heavy paper - as the paper path is straighter and the chances of jamming are reduced. Most copiers have a bypass of some sort. With some you can feed only one sheet at a time, while others allow you to stack up to 50 or 100 sheets.

C

Catch tray — Simple output tray that receives copied pages. Buyers of analog units with RADFs require sorter bins in place of catch trays if they want to produce collated output. Digital units with scan once/print many are able to deliver collated sets to catch trays with out the need for sorter bins.

Click Charge — A cost per copy charge that is levied to cover both the capital component and the operating cost of owning a photocopier. The click charge generally relies on meeting a minimum monthly copy volume and is calculated by the supplier by adding the standard copy charge to the monthly rental component. To work out the net cost per copy (Click charge) you have to work to an agreed copy volume. Click charges form the basis of most Copy Plan agreements.

Controller — In a copier context, this refers to a device that upgrades a digital copier into a multifunctional device with a printer function. Can be either an internal device built into the copier or an external one (sometimes based on PC hardware) that sits next to it. Sometimes referred to as "RIP" (raster image processor).

Copy accounting — see copy auditing

Copy auditing — Feature that restricts access to authorized persons and/or records details of usage. Can be useful when copies have to be expensed to departments or billed to clients. Typically operates by means of users entering PIN codes on a copiers control panel. Check out the number of accounts the feature can handle - typically anything from fewer than 50 to several thousand. Also check the number of digits in the account codes. If you find that the inbuilt capabilities don't meet your needs, consider a third-party add-on.

Copy charge — Usually refers to a fixed rate (cents per copy) used to cover the maintenance of a copier as distinct from the capital component of the unit (ie. purchase, rent or lease cost).
The copy charge generally covers the operating cost of a unit providing all preventative maintenance costs, toner, and drum replacement in addition to the replacement of most items subject to wear and tear.
In some instances the copy charge can cover the capital component by adding this to the operating charge - this is often called a "click charge".

Custom message annotation — Feature found on certain digital copiers that enables you to have a message stamped on copies and that allows you to vary what the message is (in contrast to a more limited feature that restricts you to a few factory-preset messages such as "Urgent", "Confidential", etc).

D

Date/time stamping — Feature found on some digital copiers allowing you to have the date and time stamped on copies as they are made.

Digital — State-of-the-art copier technology. Digital copiers scan and digitize originals before reproducing them (as opposed to using the analog "light lens" method) essentially; they are converting images to computerized data. All multifunctional copiers are digital, though not all digital copiers are multifunctional.

Duplex — Double-sided copying. Keep in mind that double-sided copying results in slower operation - manufacturers do not publish duplex speeds. Most machines use the internal tray method of duplexing, where sheets are stacked after the first side has been copied prior to being copied on the other side. Note that the number of double-sided copies that can be made in a single run is limited by the capacity of the duplex tray - typically 50 sheets, but sometimes less.
Some machines (especially digital units) instead use a stackless method of duplexing - this frees you from the run-length constraint of the tray method.

E

F

Finisher — Output device, usually with an automatic-stapling device. For reasons having more to do with copier history than logic, the verb "to finish" is generally used only to describe the stapling process that occurs with output catch trays

(OCT), not the stapling function carried out by stapler-sorters. The word "finisher" is often used to describe the entire OCT/stapling device, not just the stapling part - i.e., if you hear someone say a unit has a finisher, offset stacking is implied. Finishing on OCT equipped units often takes place without any material effect on job time, in contrast with stapling on stapler-sorters, which invariable adds to job time.

G

H

I

Image Rotation — Feature on some digital copiers that automatically align the image with the paper when the correct orientation isn't present to begin with. Can also be used to deliver alternate sets rotated at a 90-degree angle for separation purposes when producing multiple copies of multi-page documents (this works with paper fed long- and short-edge from two different trays). However, this has a negative impact on job times and is only appropriate on entry-level digital configurations where there is not catch tray with mechanical offsetting.

Image Shift — Common feature allowing you to shift the image of your original a little way across the page to leave a margin for binding. With duplex copiers, the margin position can be altered automatically from left to right side of a bound document. Also known as "margin shift".

Insert mode — Feature allowing you to program a job so that selected pages - the start of new sections within a document, for example - can be copied onto different paper drawn from one of the other paper trays. You can generally copy onto the insert sheets, as opposed to just having the unit insert blank ones. Also known as "sheet insertion".
Some vendors have a "post engine cover insertion" mode whereby covers can be added at the output stage (finisher) without having the problem of feeding thicker card stock through the fusing rollers. This can be an advantage if you need to put thicker covers around booklets.

J

Job Memory — Feature allowing you to program a sequence of instructions needed to execute a complicated copying job, so that you can set it all in motion at the press of just one or two buttons.
Not to be confused with the image memory that holds scanned copies on a digital unit.

K

L

LCT / LCB — Large-capacity tray. Generally refers to a paper tray holding 1,000 sheets or more. Can also be referred to as a Large Capacity Bin (LCB)

Lease	A form of financing the capital component of a copier that relies on spreading the cost across a number of payments over a fixed lease term. Similar but different to rental schemes. A finance lease is what is normally offered by vendors and relies on a set "residual" to determine the rates (ie. monthly lease charge). At the end of term, payment of the residual amount (usually expressed as a percentage of the purchase price) will transfer ownership of the unit from the finance company to you. An operating lease is different from a finance lease in that there is no obligation for you to payout the residual and assumes ownership of the goods at the end of lease term. You may, however, be able to purchase the goods at fair market value or extend the lease at reduced rates. In simple terms, an operating lease is like a rental scheme but with more flexible end-of-lease options.
Network Interface Card (NIC)	Required for networking a multifunctional copier-printer. The most common standard is Ethernet, which comes in two main flavors: 10BaseT and the newer and faster 100BaseT. The NIC is often part of the controller and not priced separately. In some cases, however, it is presented as a separate item.
O	
OCT	Offset catch tray. A device that receives copied pages, mechanically offsetting each
P	
Paper drawers/trays	We tend to use the words "drawer" and "tray" interchangeably when talking about paper supplies. These days, the standard paper supplies are almost always frontloading, as are some options, but large-capacity trays holding 1,000 sheets or more may be attached to the side of the copier. Check out both the number of paper trays and their capacities.
Platen	The glass surface on which originals are placed for copying. With a document feeder, your originals are transported to and from the platen automatically; the only occasions you manually copy from the platen tend to be with originals that are awkward or impossible to feed. Platen sizes vary and can be typically A3 or A2 sized. In most digital units, the original is passed across a scanning window rather than being deposited on the platen for copying as they are in analog copiers. In digital units, therefore, the platen is used solely for the manual feeding of originals.
PPM (Pages Per Minute)	Measure of a unit's engine speed when making A4-size copies. Many people use "copies per minute" (cpm) instead, though ppm is also appropriate for multi-functional units with both copy and print functions - **either way, the**

ppm and cpm figures are the same.

The ppm/cpm speed is best viewed as that which the copier is guaranteed not to exceed, not that which it will generally maintain in real-life jobs. In practice, the selection of features such as double-sided copying, stapling and sorting can all impact real-life speeds, and short-run work will generally result in fewer copies per minute being made than on longer-run work.

Productivity Aside from general uses, this word in a copier context refers to the actual number of copies made per minute on a given job as a proportion of the quoted engine speed.

Q

R

RADF Reversing Automatic Document Feeder. A type of document feeder that can handle double as well as single sided originals in contrast to an ADF that work only with single-sided originals.

RADFs on analogue copiers require sorter bins in order to produce multiple sets of multi-page documents - the unit makes all the copies of each page in a batch, depositing one copy in each sorter bin. RADFs on digital copiers do not require sorter bins, providing the unit operating with scan-once/print many technology. The originals are instead scanned to memory and complete sets are output sequentially on top of one another in a catch tray. Check out the capacity of the RADF (typically 30 - 50 sheets) and the speed at which it operates "typically the same as the engine speed of the copier it works with, but sometimes a bit slower).

RDF Recirculating Document Feeder. A term used to describe a hybrid document feeder with elements of RADF and RDH technology.

An RDF can work with either sorter bins or an OCT. When used with certain sorters, it can automatically resume copying when the bins are emptied if you need more than 20 sets - this is because the originals are returned to the "ready" position, as opposed to being ejected as with an RADF.

RDH Recirculating Document Handler. A type of document feeder found on some analogue copiers that enables you to produce multiple collated copies of multi-page documents without the need for sorter bins. Found mostly in the high-volume range.

An RDH copies one complete set after another by constantly recirculating the originals (as opposed to making all the copies of each page in a batch).

Works with an output device called an offset catch tray (OCT) or finisher that received and with finishers - staples the sets as they are output, offsetting each one slightly for separation purposes. The main benefit is that it removes the quantity restraint on multi-page collated copying imposed by the number

of sorter bins. (The only limit is the capacity of the OCT itself, which varies from 500 - 2000 sheets). Another benefit that the auto stapling process at the output end can have no noticeable effect on job time (in contrast to auto-stapling on sorters, which adds to job time). The main drawback is that the constant recirculating of originals raises the risk of miss-feeds and damage/marking to originals.

RDH technology offers nothing you can't get on digital machines with scan once / print many that use conventional document feeders - for this reason, RDHs have limited future with the introduction of digital copiers.

Reduction/enlargement Feature allowing users to either reduce or enlarge an image when producing copies. Most modern copiers come standard with this capability. See also zoom.

Rental A form of financing the acquisition of a copier that relies on spreading the cost across a number of payments over a fixed rental term. Similar, but slightly different to a lease plan.

Rental differs from a lease plan in that there is no residual amount that can be paid at the end of term and assume ownership of the unit. Usually, the unit is returned to the vendor.

Residual An amount, usually expressed as a percentage of the purchase price (but can be a fixed amount of dollars), that is used in a lease plan. The residual, along with the lease term can determine the repayment rates. Payment of the residual amount at the end of lease transfers ownership from the finance company to you.

Resolution A quantitative measure of how a digital copier scans and prints copies. Generally 400 dpi or 600 dpi, the higher number being better (600 dpi means that the scanned image consists of 600 x 600 or 360,000 dots to the square inch). It is possible for the scan resolution to be higher than the resolution at which the copies are actually output - typically, however it is the same.

S

Scan once - print many Used to describe the reproduction method of digital units that scan in a copy of the original image *once*, digitize the image and store it and use this to reproduce *many* copies. By contrast, with analog copiers, you may have to reload and "scan" the image on a number of occasions if the number of required copies exceeds the capacity of the sorter bins.

Scan while print Enhanced version of scan once/print many that allows users to scan a copy job while the unit is in the process of printing (or outputting a previously scanned copy job). Some digital machines lack this capability and of those that have it, most are unable to scan more than one job ahead. It is handy for reducing contention on multifunctional units when different people are tying to use the same machine.

Simplex Refers to single-sided copying (in contrast with duplex, which is double sided).

Sorter A multi-bin device for collating pages as you make multiple copies of multi-page originals. Typically used on analog copiers working with ADFs and RADFs. Also used on digital units lacking scan-once/print many technology. Check out the number of bins (generally 10 or 20) and the bin capacity (generally 20 - 50 sheets). The number of bins generally represents the limit on the number of sets that can be copied in an uninterrupted operation.

Stapler-sorter A type of sorter device that staples copied sets automatically after the pages have been delivered to the bins. Typically used on analog copiers working with ADFs and RADFs.

As with regular sorters, the number of bins generally represents the limit on the number of sets that can be copied in an uninterrupted operation. Stapling adds to job time - e.g. about 35 seconds for 20 sets. Look at the maximum number of sheets that can be stapled.

This generally varies from 2 to 50 sheets (it may be less than the capacity of the bins for unstapled sheets). Also check out the number of staples and staple positions - less expensive models can only put in one staple in the top left corner of a letter size page.

Important: you need a multi-position stapler-sorter if you want to staple legal sets with the staple in the top left corner.

T

Touch screen display Touch sensitive user interface allowing users to program features through a series of menus and submenus when setting the machine up for a job. Touch screens are only as good as the software behind it - it's generally not bad, but can be overrated benefit. Avoid making the availability of a touch screen as the ultimate test for user friendliness.

Transparency interleaving Feature that automatically inserts slip (white) sheets for separation purposes when you're copying onto transparencies. Makes handling copied transparencies much more manageable. A machine may give you the choice of copying onto the slip-sheets or leaving them blank, or it may be able to do only one of those things. Also known in as "OHP interleaving"

U

V

W

X

Y

Z

Zoom Reduction/enlargement feature allowing you to select the magnification ration, typically in 1% increments. Most analog copiers offer a zoom range of somewhere between 60-140% and 50-200%. Digital models offer ratios of 25-400% and wider. Units with zoom also have preset ratios.